



This Service manual OB212 deals with MCFH-13/18/24/NV-E1, MUCFH-13/18/24/NV-E1, MCFH-13/18/24/NV-E2 and MUCFH-13/18/24/NV-E2 in OB196 REVISED EDITION A issued in September in 1997.

Therefore, please refer to OB212, not to OB196 REVISED EDITION A, for the above models.

FLOOR AND CEILING TYPE AIR CONDITIONERS

No. OB267

# SERVICE MANUAL

## Wireless type Models

**MCFH-13NV-**E4(WH)

**MCFH-18NV-**E3(WH)

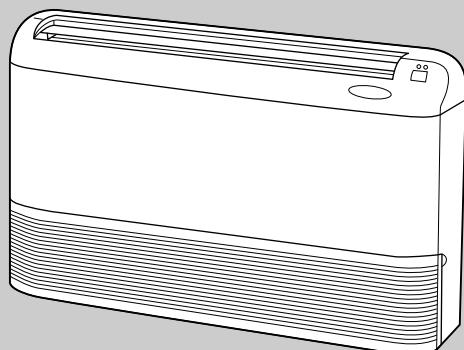
**MCFH-24NV-**E3(WH)

**-MUCFH-13NV-**E4

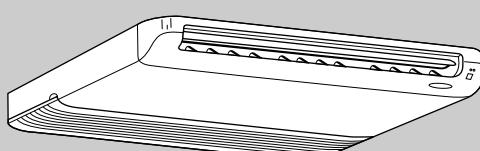
**-MUCFH-18NV-**E3

**-MUCFH-24NV-**E3

(When installed on the floor)



(When installed on the ceiling)



## CONTENTS

1. TECHNICAL CHANGES .....	3
2. PART NAMES AND FUNCTIONS .....	3
3. SPECIFICATION .....	6
4. NOISE CRITERIA CURVES .....	7
5. OUTLINES AND DIMENSIONS .....	8
6. WIRING DIAGRAM .....	9
7. REFRIGERANT SYSTEM DIAGRAM .....	14
8. PERFORMANCE CURVES .....	16
9. MICROPROCESSOR CONTROL .....	32
10. SERVICE FUNCTIONS .....	41
11. TROUBLESHOOTING .....	42
12. DISASSEMBLY INSTRUCTIONS .....	55
13. PARTS LIST .....	63
14. OPTIONAL PARTS .....	70

\* As for parts lists, all sub number's series are included.



## 1

# TECHNICAL CHANGES

**MCFH-13NV-E3 · MUCFH-13NV-E3**



**MCFH-13NV-E4 · MUCFH-13NV-E4**

1. Remote controller has changed.

SWING button is removed, but SWING MODE function is available by VANE CONTROL button.

**MCFH-18NV-E2 · MUCFH-18NV-E2**



**MCFH-18NV-E3 · MUCFH-18NV-E3**

1. Remote controller has changed.

SWING button is removed, but SWING MODE function is available by VANE CONTROL button.

**MCFH-24NV-E2 · MUCFH-24NV-E2**



**MCFH-24NV-E3 · MUCFH-24NV-E3**

1. Remote controller has changed.

SWING button is removed, but SWING MODE function is available by VANE CONTROL button.

2. Ball valve has changed to stop valve.

3. Deicer P.C. board has changed.

## 2

# PART NAMES AND FUNCTIONS

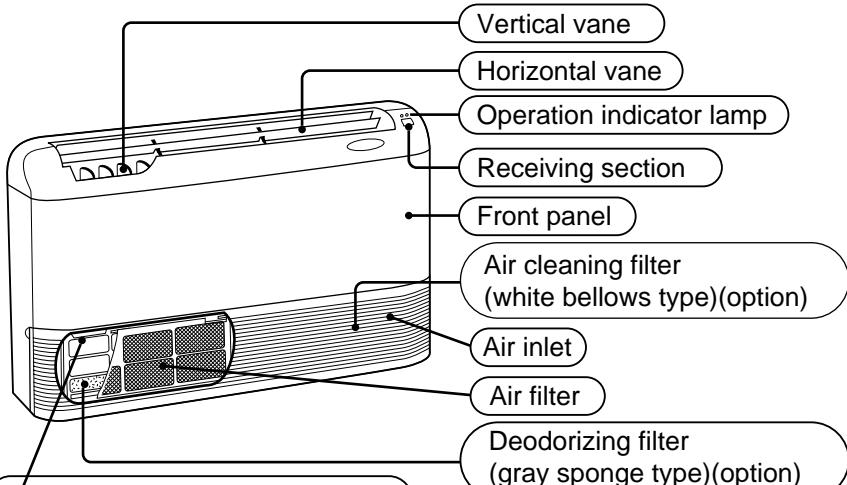
**MCFH-13NV -E4**

**MCFH-18NV -E3**

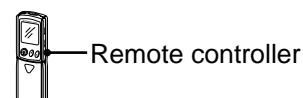
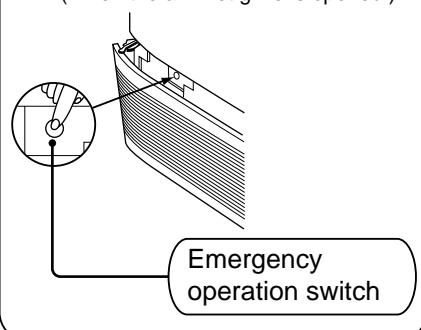
**MCFH-24NV -E3**

## INDOOR UNIT

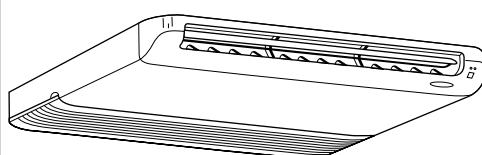
(When installed on the floor)



Operation section  
(When the air inlet grille is opened.)



(When installed on the ceiling)

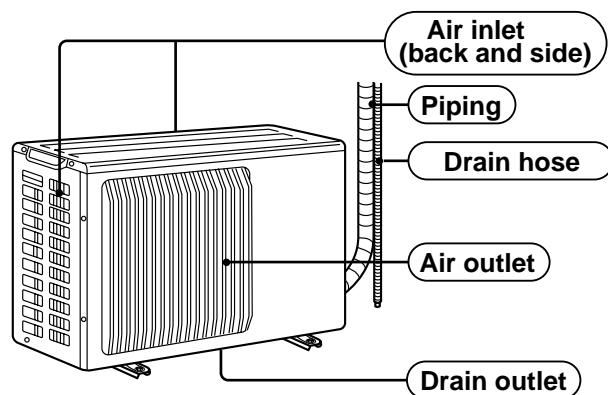


## ACCESSORIES

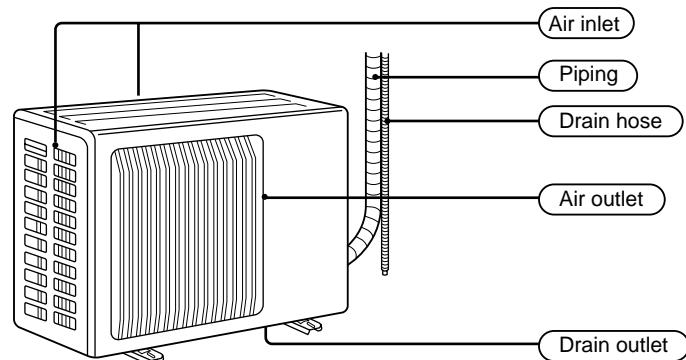
Item	Q'ty
① Installation plate	2
② Unit fixing screw 5 × 12mm	2
③ Wireless remote controller	1
④ Remote controller mounting hardware	1
⑤ Fixing screw for ④ 3.5 × 16mm (Black)	2
⑥ Battery (AAA) for remote controller	2
⑦ Drain hose	1
⑧ Drain pipe cover	1
⑨ Knockout cover	1
⑩ Screw for ⑨ 4 × 10mm	2

## OUTDOOR UNIT

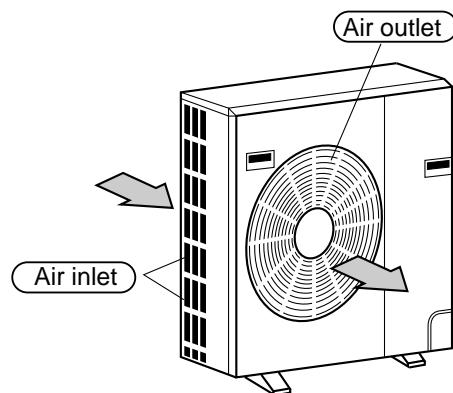
MUCFH-13NV -E4



MUCFH-18NV -E3



MUCFH-24NV -E3

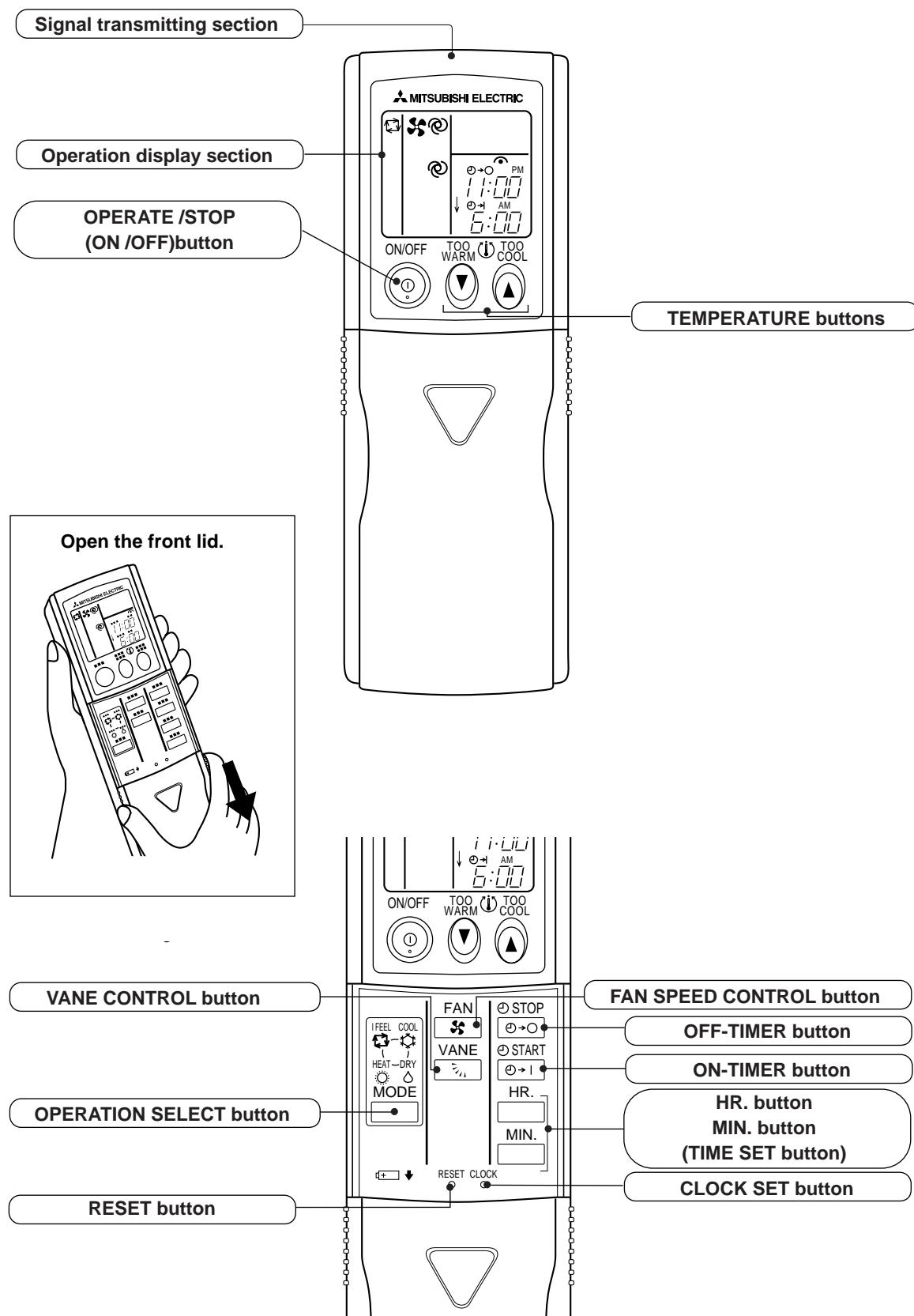


MCFH-13NV - E4

MCFH-18NV - E3

MCFH-24NV - E3

## REMOTE CONTROLLER



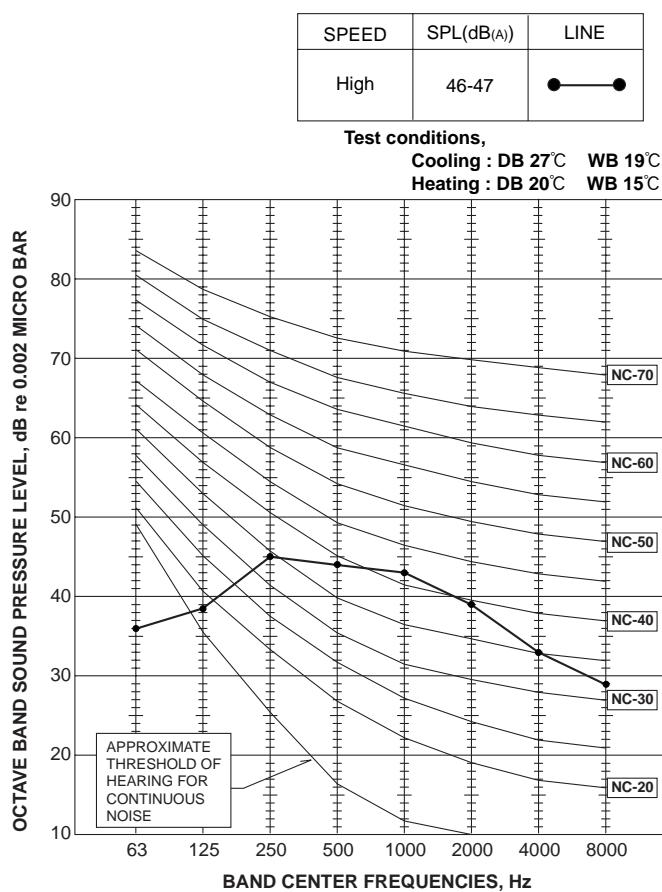
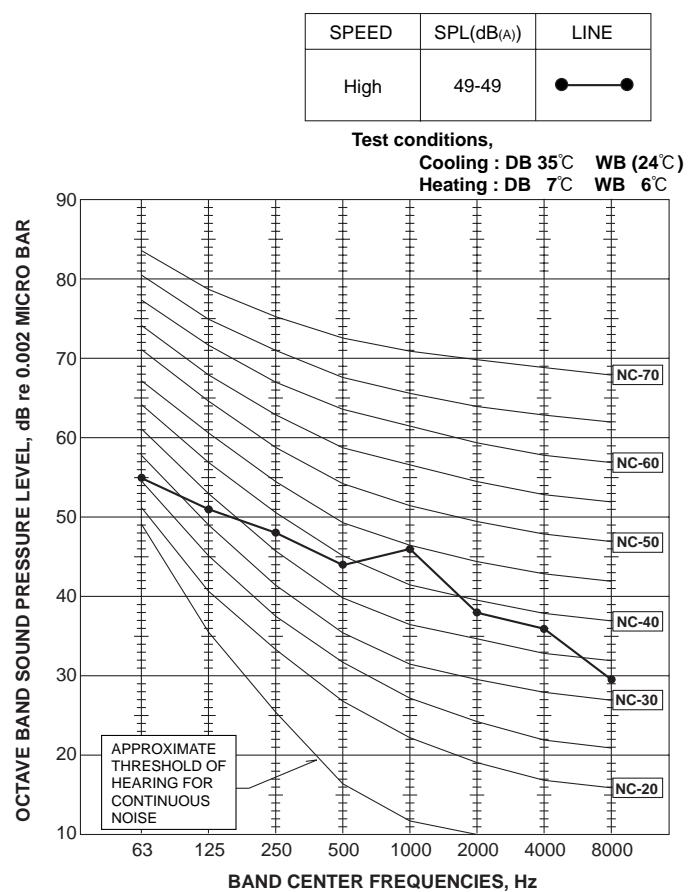
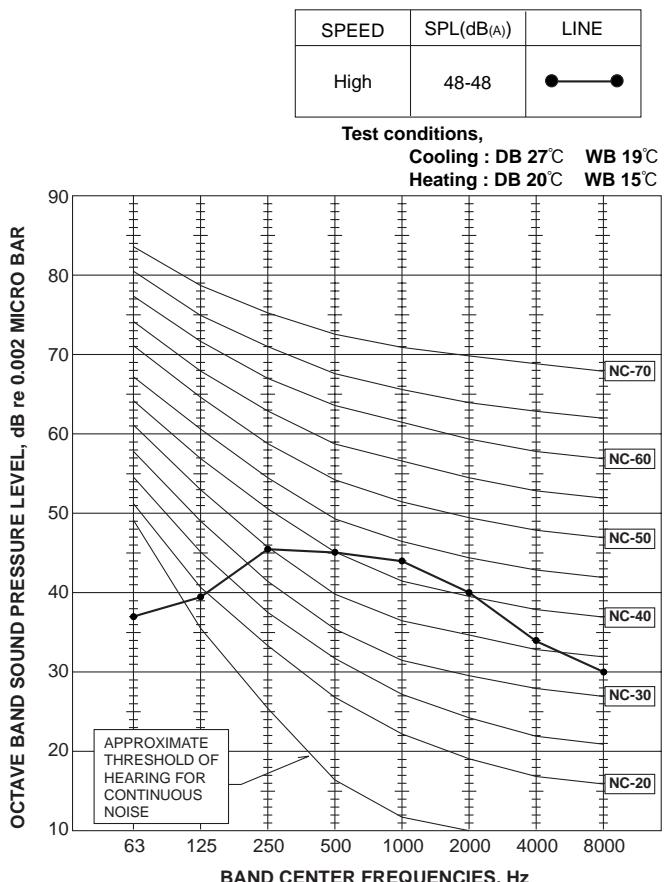
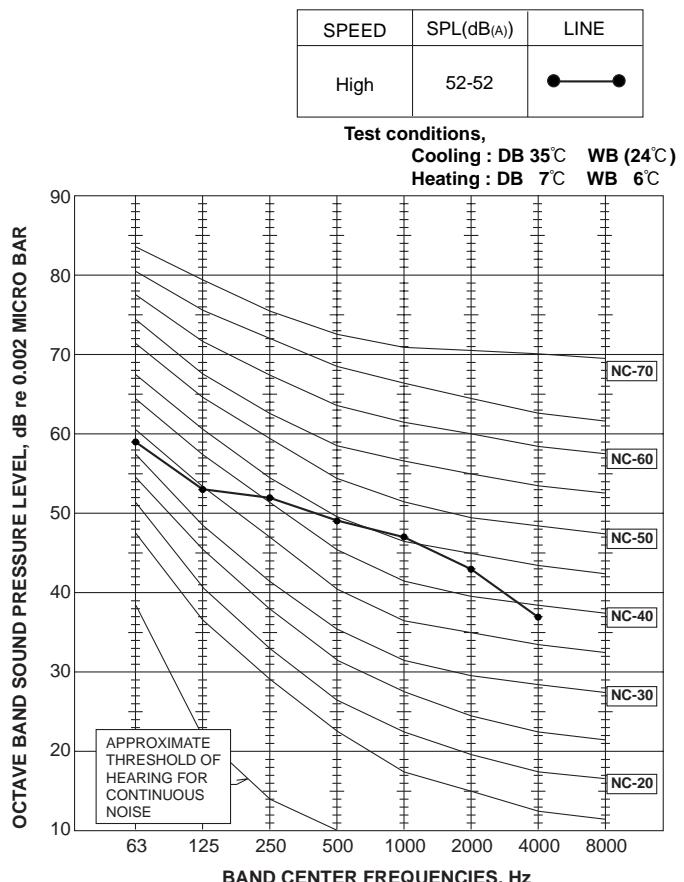
# SPECIFICATION

Indoor model			MCFH-13NV- <span style="border: 1px solid black; padding: 2px;">E4</span>		MCFH-18NV- <span style="border: 1px solid black; padding: 2px;">E3</span>		MCFH-24NV- <span style="border: 1px solid black; padding: 2px;">E3</span>		
Function			Cooling	Heating	Cooling	Heating	Cooling	Heating	
Power supply			Single phase 220 - 240 V, 50Hz						
Capacity	Capacity	kW	3.7	4.0	5.0	5.4	6.0	6.2	
	Air flow(High)	m³ /h	780		840		840		
	Dehumidification	L/h	1.5	-	2.6	-	3.1	-	
Electrical data	Power outlet	A	10		15		15		
	Running current	A	6.2 - 6.4	5.4 - 5.8	9.3 - 9.0	5.4 - 5.8	12.5 - 11.7	11.7 - 11.3	
	Power input	W	1,310 - 1,400	1,130 - 1,220	2,030 - 2,120	1,910 - 2,010	2,720 - 2,750	2,540 - 2,650	
	Auxiliary heater	A(kW)	-	-	-	-	-	-	
	Power factor	%	96 - 91	95 - 88	99 - 98	98 - 97	99 - 98	99 - 98	
	Starting current	A	35 - 38		52 - 58		59 - 59		
	Fan motor current	A	0.30	0.30	0.36	0.36	0.36	0.36	
Coefficient of performance(C.O.P)			2.82 - 2.64	3.54 - 3.28	2.46 - 2.36	2.83 - 2.69	2.21 - 2.18	2.44 - 2.34	
Fan motor	Model		RB4V25-AB		RB4V36-AB		RB4V36-AB		
	Winding resistance(at20°C)	Ω	WHT-BLK 182.2 BLK-YLW 68.9 YLW-BLU 47.5 BLU- BRN 31.5 BRN-RED 22.9		WHT-BLK 82.9 BLK-YLW 65.6 YLW-BLU 36.0 BLU- BRN 27.0 BRN-RED 13.7		WHT-BLK 82.9 BLK-YLW 65.6 YLW-BLU 36.0 BLU- BRN 27.0 BRN-RED 13.7		
Dimensions W×H×D		mm	1100 × 650 × 180						
Weight		kg	26		26		26		
Special remarks	Air direction		5		5		5		
	Sound level (High)	dB	46 - 47		48 - 48		48 - 48		
	Fan speed (High)	rpm	1,220 - 1,260		1,310 - 1,330		1,310 - 1,330		
	Fan speed regulator		3		3		3		
	Thermistor RT11(at25°C)	kΩ	10		10		10		
	Thermistor RT12(at25°C)	kΩ	10		10		10		
Outdoor model			MUCFH-13NV- <span style="border: 1px solid black; padding: 2px;">E4</span>		MUCFH-18NV- <span style="border: 1px solid black; padding: 2px;">E3</span>		MUCFH-24NV- <span style="border: 1px solid black; padding: 2px;">E3</span>		
Electrical data	Air flow	m³ /h							
	Compressor motor current	A	5.54 - 5.72	4.74 - 5.12	8.55 - 8.25	8.15 - 7.85	11.56 - 10.76	10.76 - 10.36	
	Fan motor current	A	0.36	0.38	0.39	0.39	0.58	0.58	
Compressor	Model		RH-231VHAT		NH-36VMDT		NH-47VMDT		
	Output	W	1,100		1,700		2,200		
	Winding resistance(at20°C)	Ω	C - R 2.11 C - S 3.97		C - R 1.20 C - S 2.70		C - R 0.96 C - S 2.07		
	Model		RA6V33-CA		RA6V50-OG		RA6V85-AA		
Fan motor	Winding resistance(at20°C)	Ω	WHT-BLK 176.0 BLK-RED 413.0		WHT-BLK 116.4 BLK-RED 111.0		WHT-BLK 62.7 BLK-YLW 30.2 BLK-RED 62.9		
	Dimensions W×H×D	mm	780 × 540 × 255		850 × 605 × 290		870 × 850 × 295		
Weight		kg	38		59		72		
Special remarks	Sound level(High)	dB	49 - 49		52 - 52		53 - 53		
	Fan speed(High)	rpm	700 - 740		810 - 845		720 - 750		
	Fan speed regulator		1		1		2		
	Refrigerant filling capacity(R22)	kg	1.35		1.80		2.40		
	Refrigerating oil (Model)	cc	520 (MS56)		1,200 (MS32N1)		1,200 (MS32N1)		
	Thermistor RT61(at0°C)	kΩ	33.18		33.18		33.18		
	Thermistor RT63(at0°C)	kΩ	—		—		33.18		

NOTE: Test conditions are based on ISO 5151

Cooling : Indoor DB27°C WB19°C      Heating : Indoor DB20°C WB 15°C  
           Outdoor DB35°C WB(24°C)           Outdoor DB 7°C WB 6°C

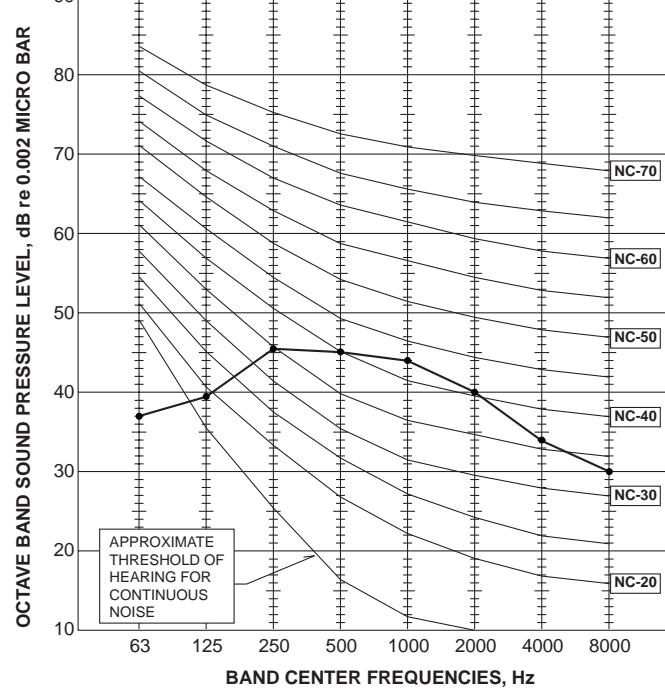
## NOISE CRITERIA CURVES

**MCFH-13NV - [E4]****MUCFH-13NV - [E4]****MCFH-18NV - [E3]****MUCFH-18NV - [E3]**

**MCFH-24NV** - [E3]**MUCFH-24NV** - [E3]

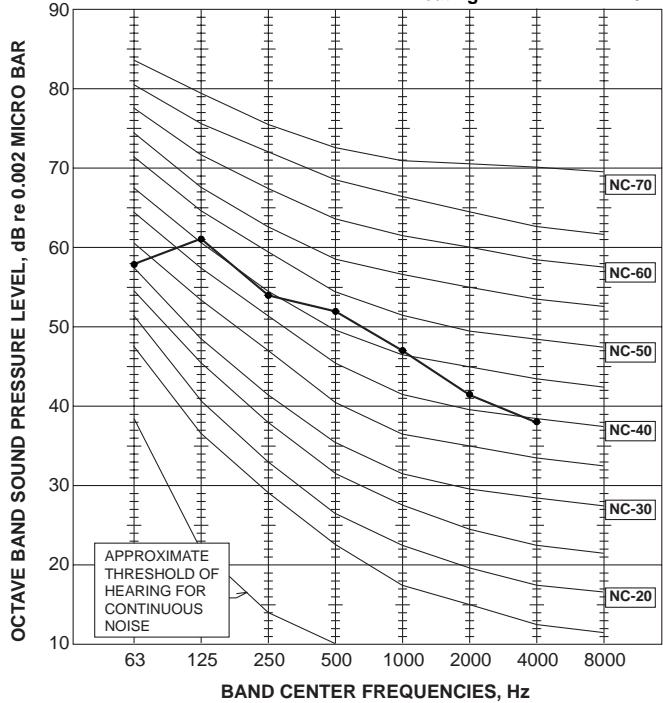
SPEED	SPL(dB(A))	LINE
High	48-48	●—●

**Test conditions,**  
Cooling : DB 27°C WB 19°C  
Heating : DB 20°C WB 15°C



SPEED	SPL(dB(A))	LINE
High	53-53	●—●

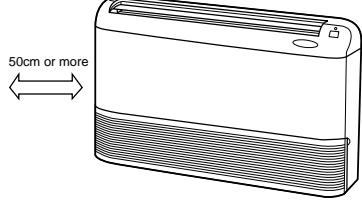
**Test conditions,**  
Cooling : DB 35°C WB (24°C)  
Heating : DB 7°C WB 6°C

**5****OUTLINES AND DIMENSIONS****MCFH-13NV** - [E4]**MCFH-18NV** - [E3]**MCFH-24NV** - [E3]

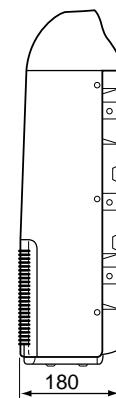
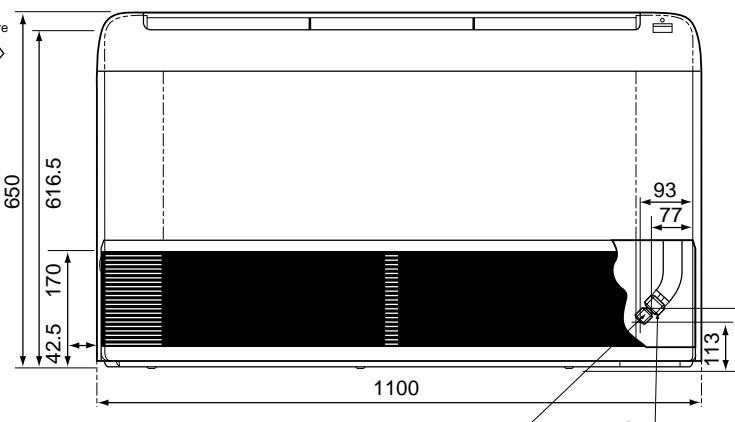
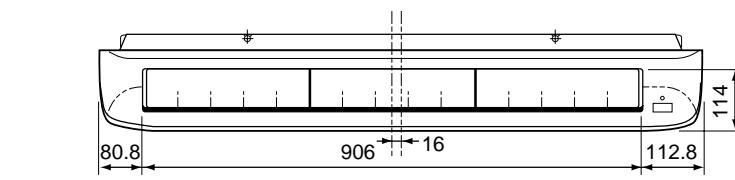
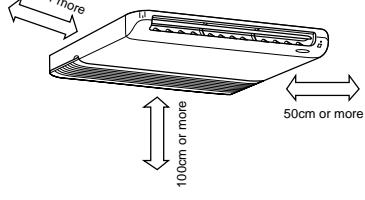
Unit: mm

**INDOOR UNIT**

(When installed on the floor)



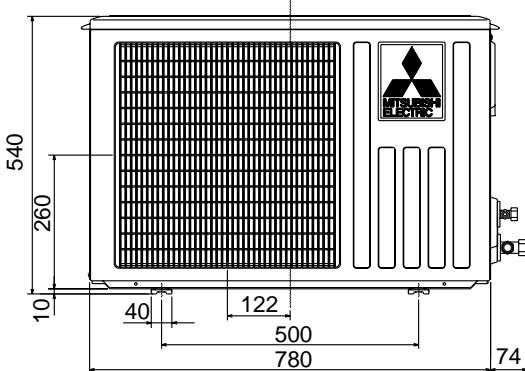
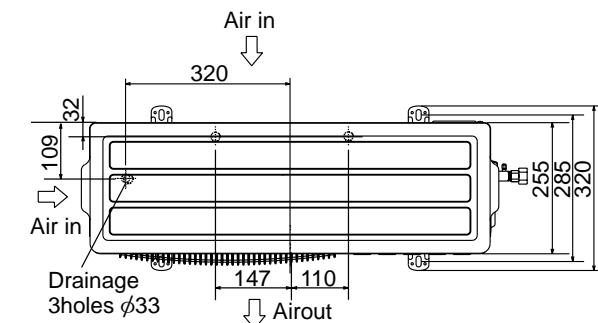
(When installed on the ceiling)



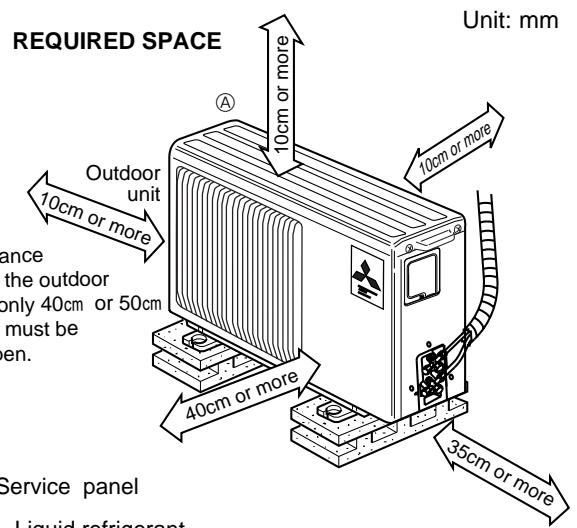
Wireless remote controller

## MUCFH-13NV - E4

### OUTDOOR UNIT

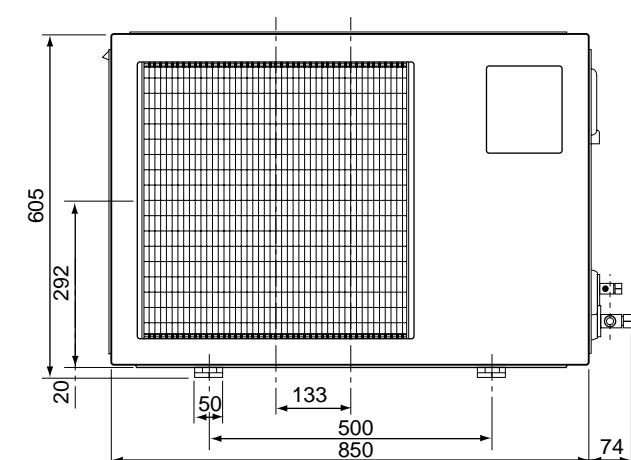
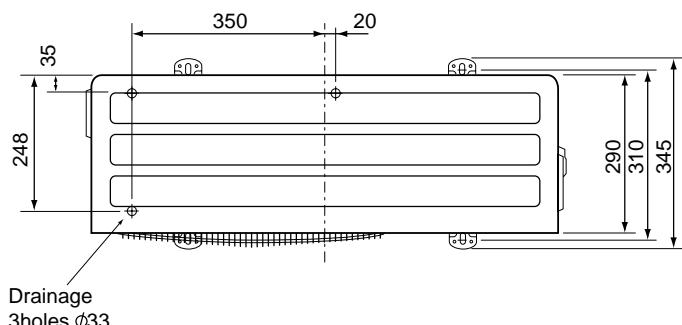


### REQUIRED SPACE

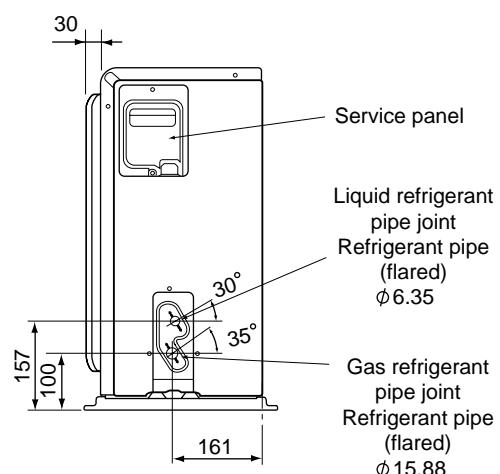
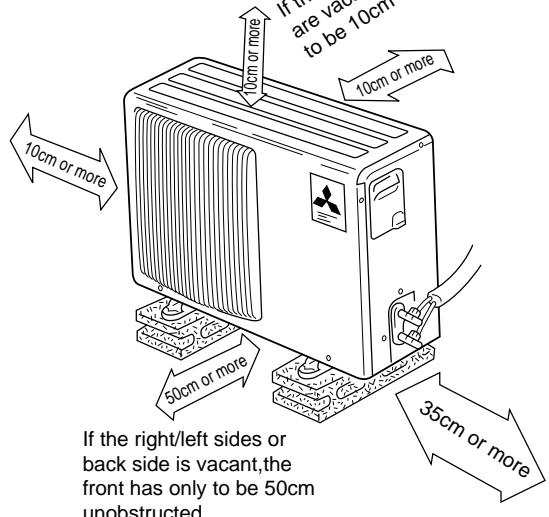


## MUCFH-18NV - E3

### OUTDOOR UNIT



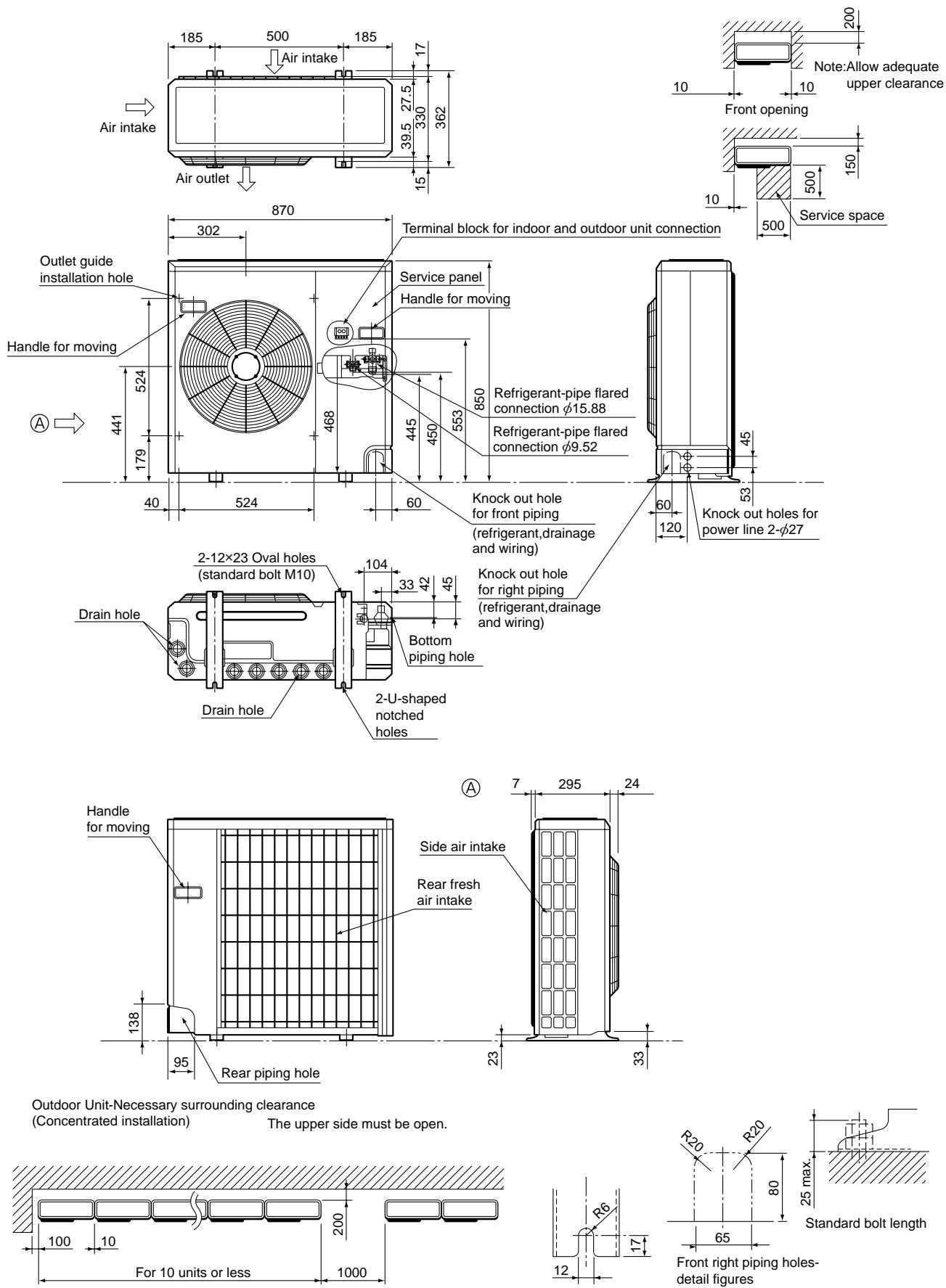
If the front or right/left sides are vacant, the top has only to be 10cm unobstructed.



# MUCFH-24NV - E3

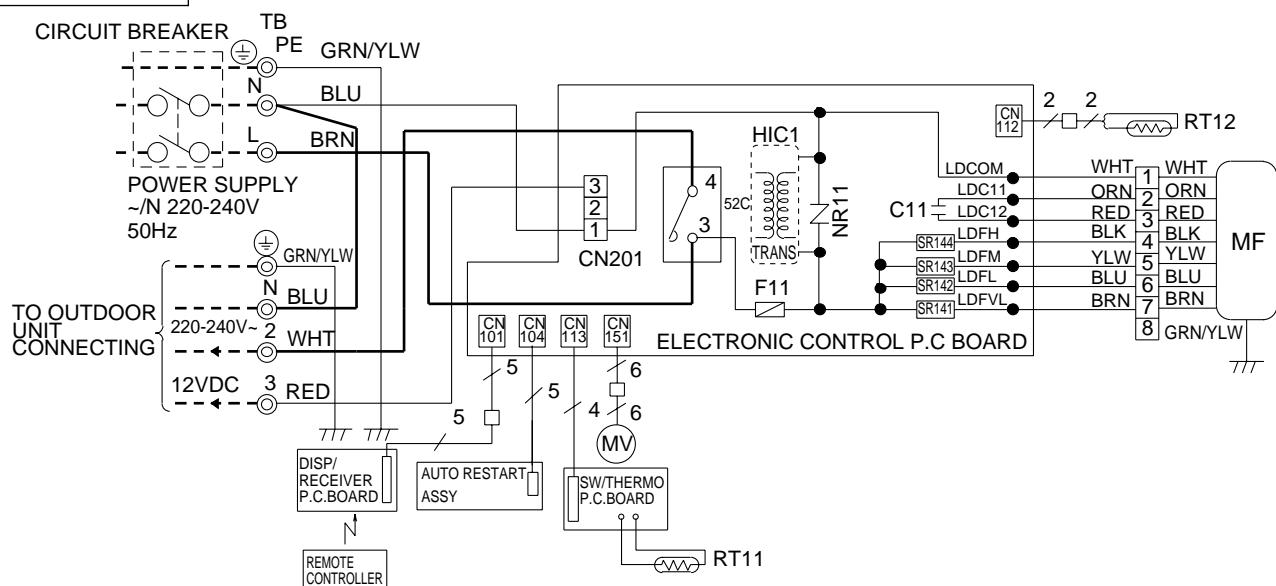
Unit: mm

## Outdoor Unit-Necessary surrounding clearance



## INDOOR UNIT

MODEL MCFH-13NV- E4



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C11	INDOOR FAN CAPACITOR	MV	VANE MOTOR	SR141~SR144	SOLID STATE RELAY
F11	FUSE (3.15A)	NR11	VARISTOR	SW/THERMO P.C. BOARD	SWITCH & ROOM TEMPERATURE THERMISTOR P.C. BOARD
HIC1	DC/DC CONVERTER	RT11	ROOM TEMPERATURE THERMISTOR	TB	TERMINAL BLOCK
MF	INDOOR FAN MOTOR(INNER PROTECTOR)	RT12	INDOOR COIL THERMISTOR	52C	CONTACTOR

NOTE:1. About the outdoor side electric wiring, refer to the outdoor unit electric wiring diagram for servicing.

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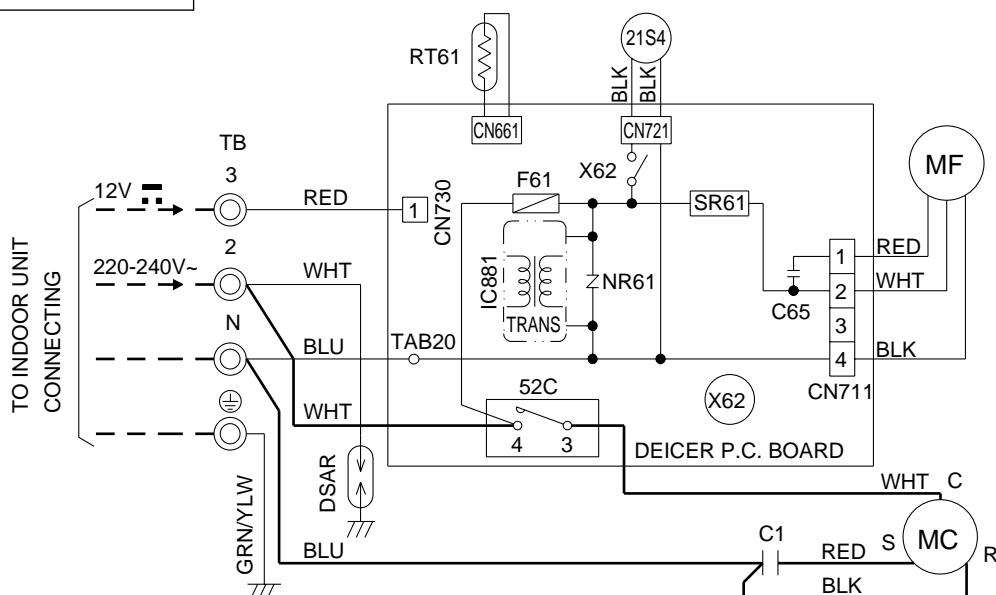
2. Use copper conductors only.(For field wiring)

3. Symbols below indicate;

◎: Terminal block, □□□: Connector

## OUTDOOR UNIT

MODEL MUCFH-13NV- E4



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C1	COMPRESSOR CAPACITOR	MC	COMPRESSOR(INNER PROTECTOR)	TB	TERMINAL BLOCK
C65	OUTDOOR FAN CAPACITOR	MF	OUTDOOR FAN MOTOR(INNER PROTECTOR)	X62	R.V. COIL RELAY
DSAR	SURGE ABSORBER	NR61	VARISTOR	21S4	R.V. COIL
F61	FUSE(2A)	RT61	DEFROST THERMISTOR	52C	COMPRESSOR CONTACTOR
IC881	DC/DC CONVERTER	SR61	SOLID STATE RELAY		

NOTE:1. About the outdoor side electric wiring, refer to the outdoor unit electric wiring diagram for servicing.

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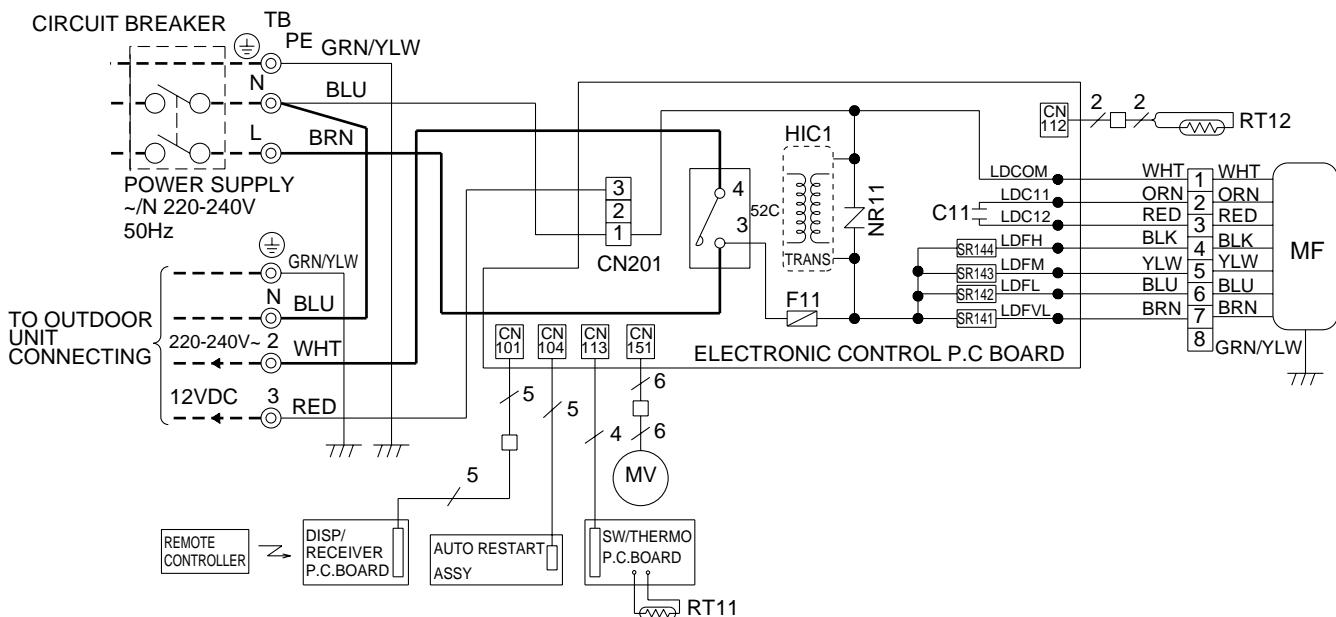
2. Use copper conductors only.(For field wiring)

3. Symbols below indicate;

◎: Terminal block, □□□: Connector

## INDOOR UNIT

MODEL MCFH-18NV- E3



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C11	INDOOR FAN CAPACITOR	MV	VANE MOTOR	SR141-SR144	SOLID STATE RELAY
F11	FUSE (3.15A)	NR11	VARISTOR	SW/THERMO P.C. BOARD	SWITCH & ROOM TEMPERATURE THERMISTOR P.C. BOARD
HIC1	DC/DC CONVERTER	RT11	ROOM TEMPERATURE THERMISTOR	TB	TERMINAL BLOCK
MF	INDOOR FAN MOTOR(INNER PROTECTOR)	RT12	INDOOR COIL THERMISTOR	52C	CONTACTOR

NOTE:1. About the outdoor side electric wiring, refer to the outdoor unit electric wiring diagram for servicing.

2. Use copper conductors only.(For field wiring)

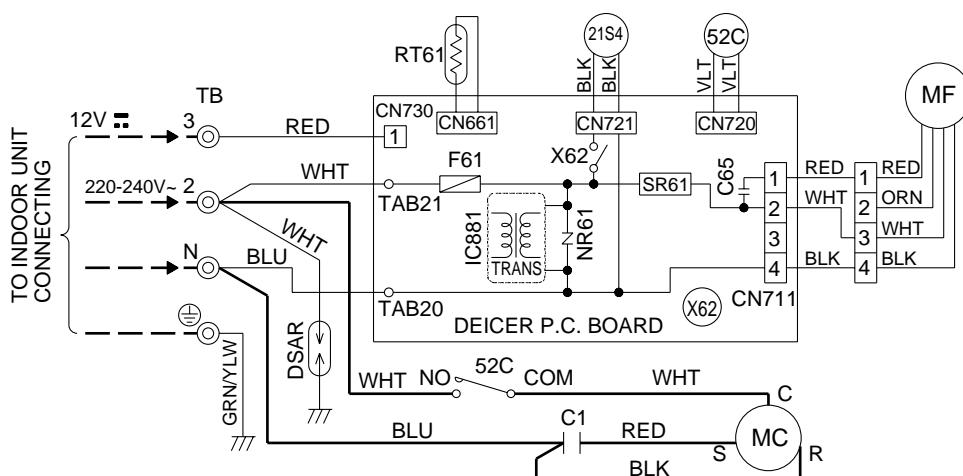
3. Symbols below indicate;

◎: Terminal block, □□□: Connector

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## OUTDOOR UNIT

MODEL MUCFH-18NV- E3



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C1	COMPRESSOR CAPACITOR	MC	COMPRESSOR (INNER PROTECTOR)	TB	TERMINAL BLOCK
C65	OUTDOOR FAN CAPACITOR	MF	FAN MOTOR (INNER PROTECTOR)	X62	R.V. COIL RELAY
DSAR	SURGE ABSORBER	NR61	VARISTOR	21S4	R.V. COIL
F61	FUSE (2A)	RT61	DEFROST THERMISTOR	52C	COMPRESSOR CONTACTOR
IC881	DC/DC CONVERTER	SR61	SOLID STATE RELAY		

NOTE:1. About the outdoor side electric wiring, refer to the outdoor unit electric wiring diagram for servicing.

2. Use copper conductors only.(For field wiring)

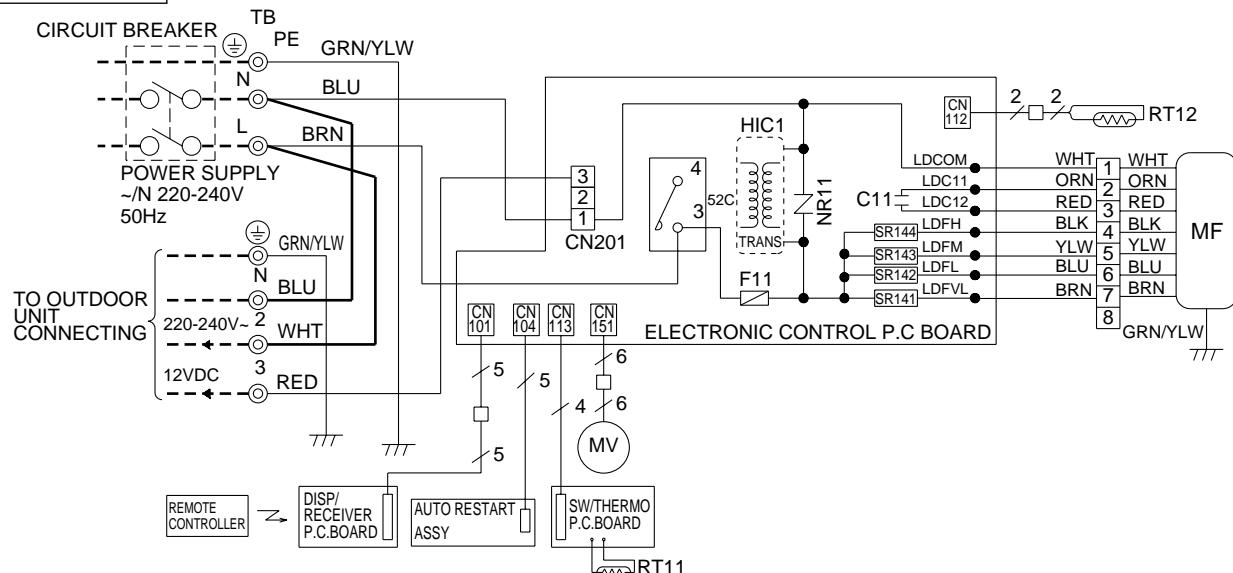
3. Symbols below indicate;

◎: Terminal block, □□□: Connector

SG79J011H01

## INDOOR UNIT

## MODEL MCFH-24NV- E3



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C11	INDOOR FAN CAPACITOR	MV	VANE MOTOR	SR141-SR144	SOLID STATE RELAY
F11	FUSE (3.15A)	NR11	VARISTOR	SW/THERMO P.C. BOARD	SWITCH & ROOM TEMPERATURE THERMISTOR P.C. BOARD
HIC1	DC/DC CONVERTER	RT11	ROOM TEMPERATURE THERMISTOR	TB	TERMINAL BLOCK
MF	INDOOR FAN MOTOR(INNER PROTECTOR)	RT12	INDOOR COIL THERMISTOR	52C	CONTACTOR

NOTE:1. About the outdoor side electric wiring, refer to the outdoor unit electric wiring diagram for servicing.

2. Use copper conductors only.(For field wiring)

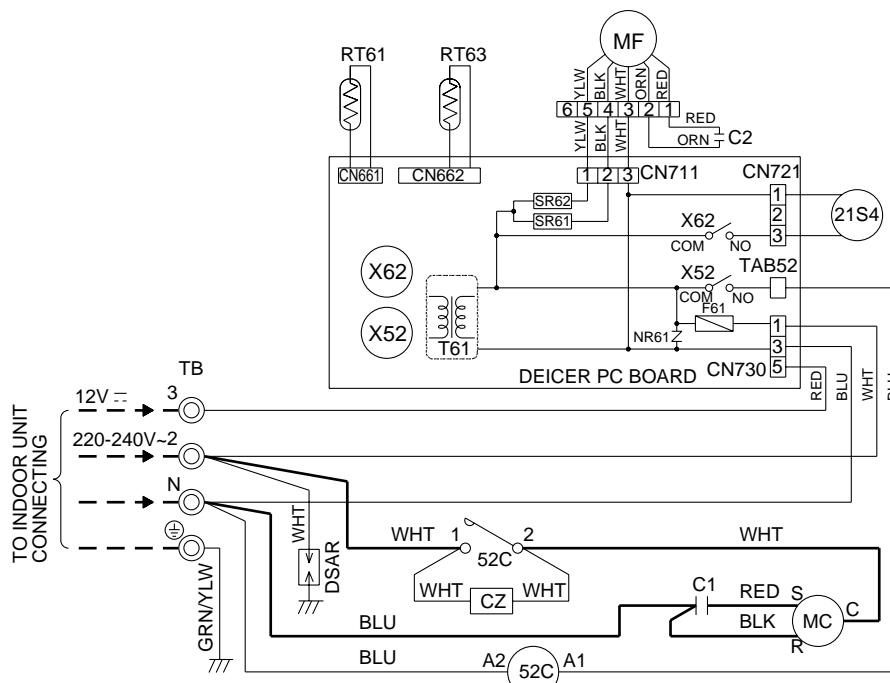
3. Symbols below indicate;

◎: Terminal block, □□□: Connector

VG79B035H01

## OUTDOOR UNIT

## MODEL MUCFH-24NV- E3



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CZ	SURGE ABSORBER 1	MF	OUTDOOR FAN MOTOR (INNER PROTECTOR)	TB	TERMINAL BLOCK
C1	COMPRESSOR CAPACITOR	NR61	VARISTOR	T61	TRANS
C2	FAN MOTOR CAPACITOR	RT61	DEFROST TEMPERATURE THERMISTOR	X52	CONTACTOR
DSAR	SURGE ABSORBER 2	RT63	AMBIENT TEMPERATURE THERMISTOR	X62	R.V. COIL RELAY
F61	FUSE (3.15A)	SR61	SOLID STATE RELAY	21S4	R.V. COIL
MC	COMPRESSOR (INNER PROTECTOR)	SR62	SOLID STATE RELAY	52C	COMPRESSOR CONTACTOR

NOTES: 1.Use copper conductors only (For field wiring).

2.Since the indoor and outdoor unit connecting wires have polarity, connect them according to the numbers (3,2,N).

3.Symbols below indicate.

◎:Terminal block, □□□:Connector

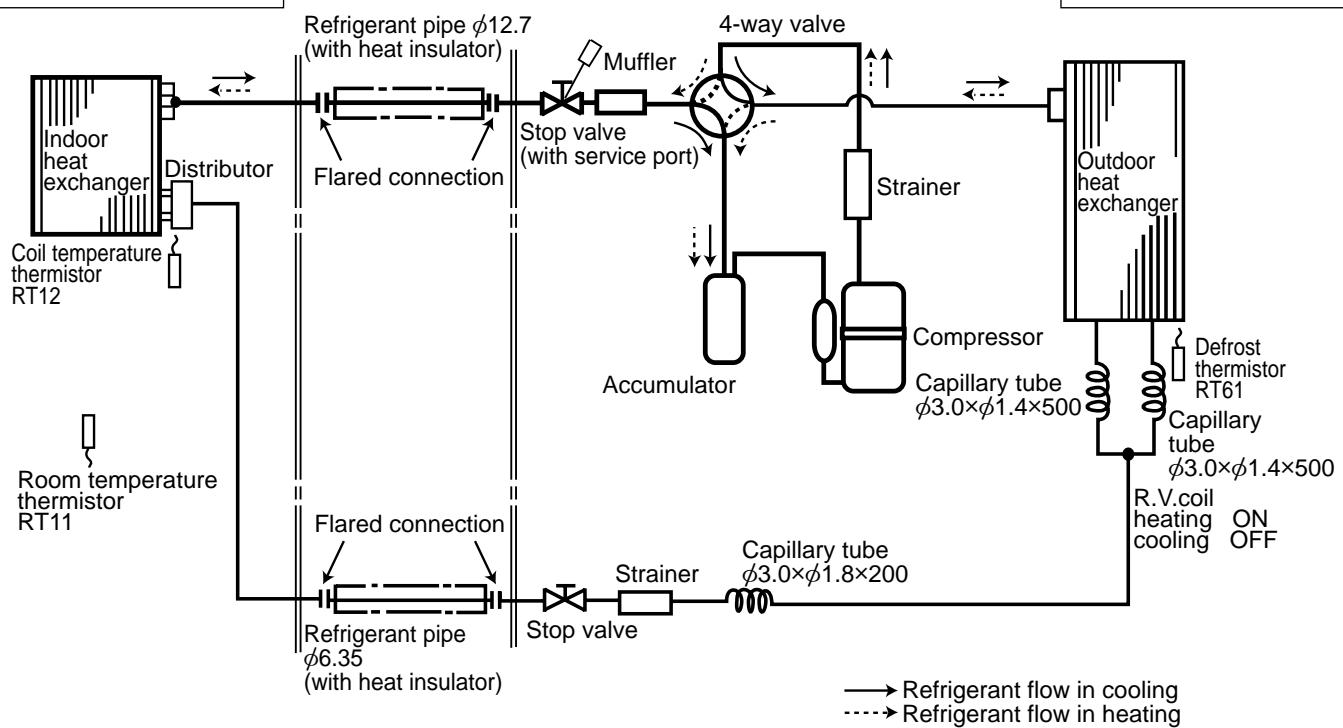
SG79J184H01

# REFRIGERANT SYSTEM DIAGRAM

MCFH-13NV- E4

MUCFH-13NV- E4

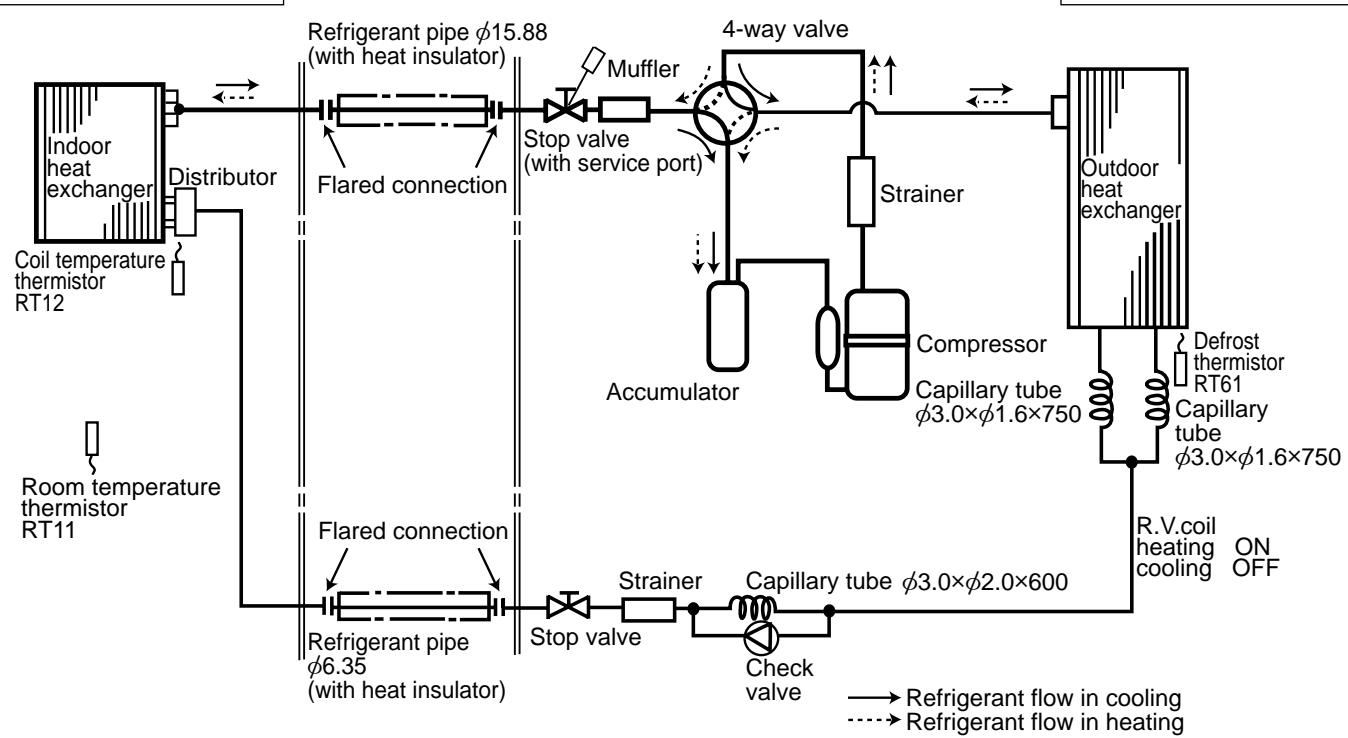
## INDOOR UNIT

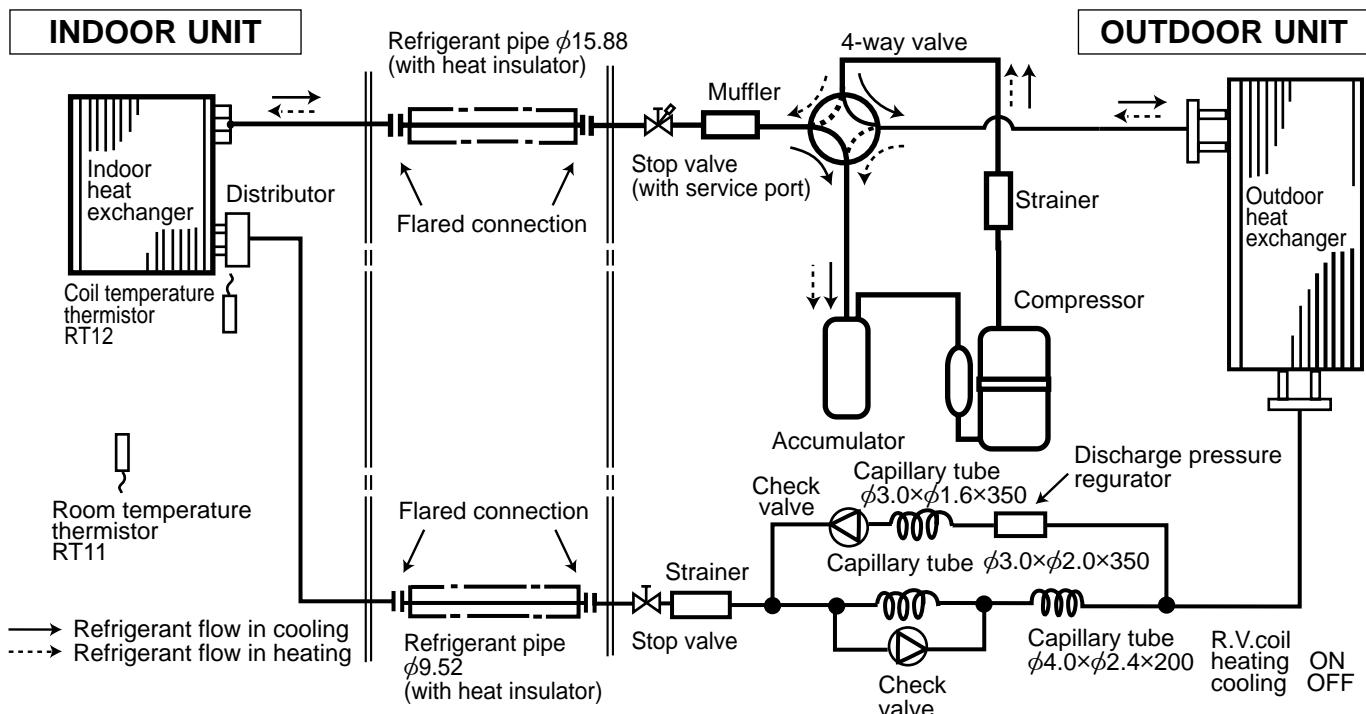


MCFH-18NV- E3

MUCFH-18NV- E3

## INDOOR UNIT

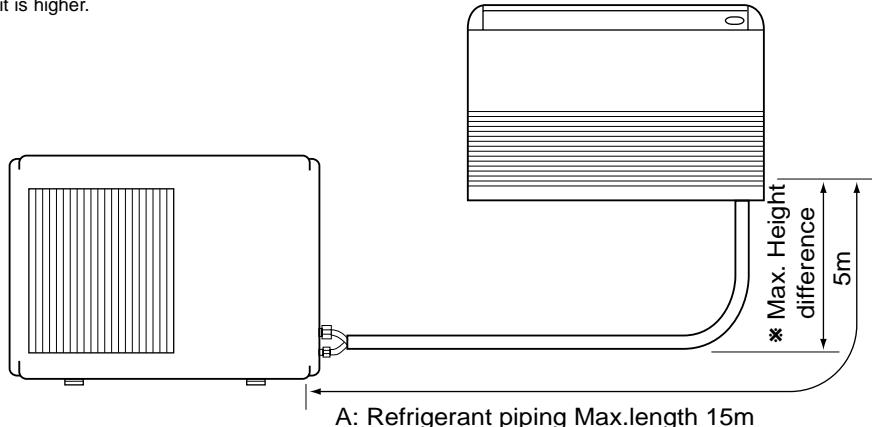


MCFH-24NV- E3MUCFH-24NV- E3

### MAX. REFRIGERANT PIPING LENGTH & MAX. HEIGHT DIFFERENCE

Models	Refrigerant piping MAX. length :mm A	Piping size O.D. : mm	
		Gas	Liquid
MCFH-13NV- <span style="border: 1px solid black; padding: 0 2px;">E4</span>	15	φ12.7	φ6.35
MCFH-18NV- <span style="border: 1px solid black; padding: 0 2px;">E3</span>		φ15.88	φ9.52
MCFH-24NV- <span style="border: 1px solid black; padding: 0 2px;">E3</span>			

\*It does not matter which unit is higher.



### ADDITIONAL REFRIGERANT CHARGE (R22 : g)

If pipe length exceeds 7m, additional refrigerant (R22) charge is required

Models	Outdoor unit:precharged (up to 7m)	Refrigerant piping length (one way)								
		7m	8m	9m	10m	11m	12m	13m	14m	15m
MCFH-13NV- <span style="border: 1px solid black; padding: 0 2px;">E4</span>	1,350	0	50	100	150	200	250	300	350	400
MCFH-18NV- <span style="border: 1px solid black; padding: 0 2px;">E3</span>	1,800		65	130	195	260	325	390	455	520
MCFH-24NV- <span style="border: 1px solid black; padding: 0 2px;">E3</span>	2,400									

Calculation :  $(MCFH-13/18NV) \times g = 50g/m \times (\text{Refrigerant piping length (m)} - 7)$   
 $(MCFH-24NV) \times g = 65g/m \times (\text{Refrigerant piping length (m)} - 7)$

# PERFORMANCE CURVES

The standard data contained in these specifications apply only to the operation of the air conditioner under normal condition. Operating conditions vary according to the areas where these units are installed. The following information has been provided to clarify the operating characteristics of the air conditioner under the conditions indicated by the performance curve.

## (1) GUARANTEED VOLTAGE

198~264V, 50Hz

## (2) AIR FLOW

Air flow should be set at MAX.

## (3) MAIN READINGS

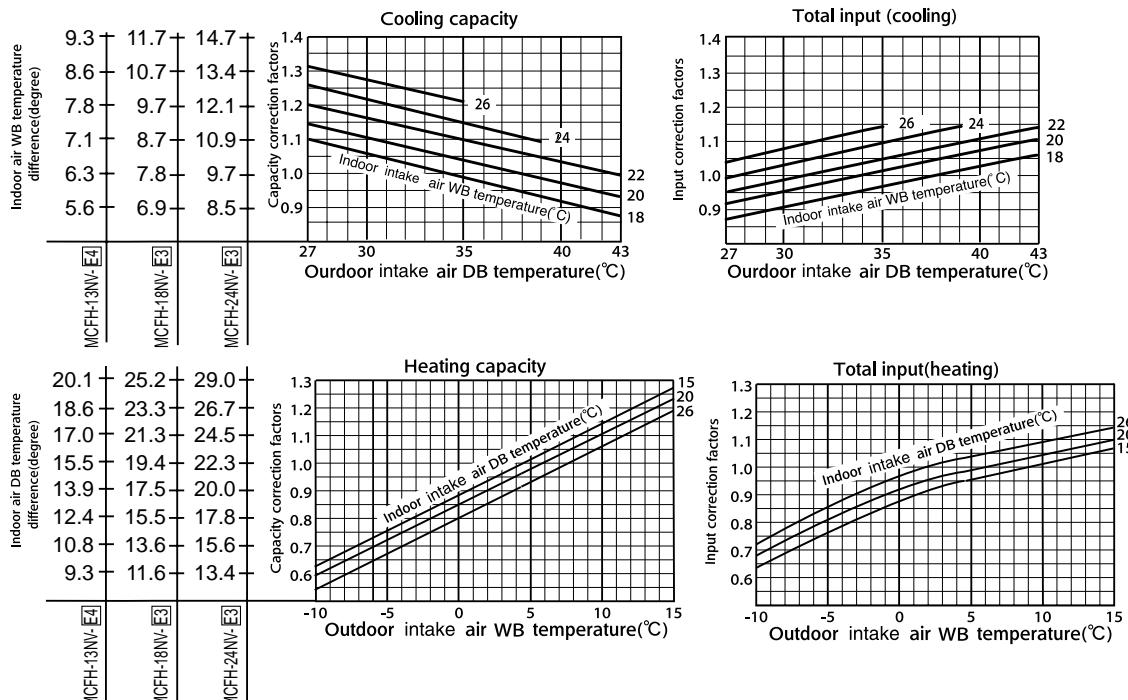
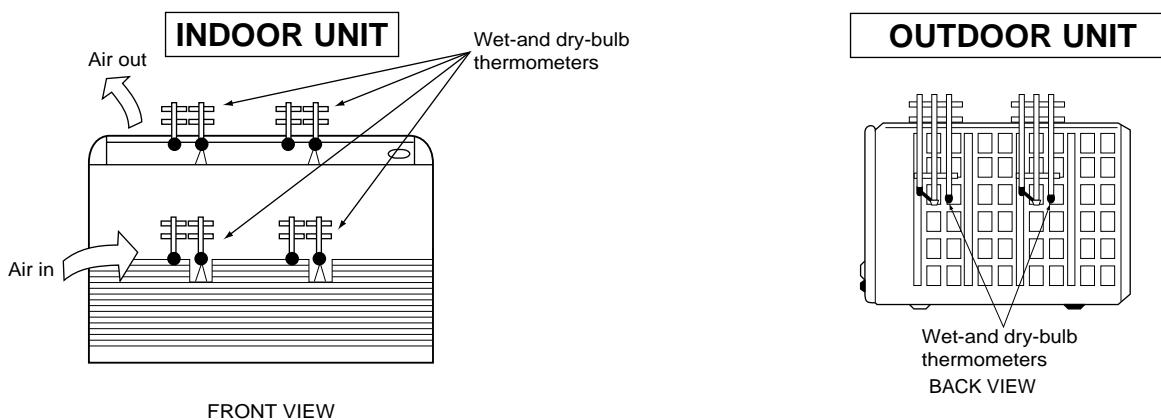
### COOLING

- (1) Indoor intake air wet-bulb temperature : °CWB
- (2) Indoor outlet air wet-bulb temperature : °CWB
- (3) Outdoor intake air dry-bulb temperature : °CDB
- (4) Total input : W

Indoor air wet/dry-bulb temperature difference on the left side of the chart on page 16 shows the difference between the indoor intake air wet/dry-bulb temperature and the indoor outlet air wet/dry-bulb temperature for your reference at service.

## How to measure the indoor air wet-bulb/dry-bulb temperature difference

1. Attach at least 2 sets of wet-and-dry-bulb thermometers to the indoor air inlet as shown in the figure, and at least 2 sets of wet-and-dry-bulb thermometers to the indoor air outlet. The thermometers must be attached to the position where air speed is high.
2. Attach at least 2 sets of wet-and-dry-bulb thermometers to the outdoor air inlet.
- Cover the thermometers to prevent direct rays of the sun.
3. Check that the air filter is cleaned.
4. Open windows and doors of the room.
5. Press the EMERGENCY OPERATION switch once(twice) to start the EMERGENCY COOL(HEAT) MODE.
6. When system stabilizes after more than 15 minutes, measure temperature and take an average temperature.
7. 10 minutes later, measure temperature again and check that the temperature does not change.



## OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT

### COOL operation

① Both indoor and outdoor units are under the same temperature/humidity condition.

Dry Bulb temperature (°C)	Relative humidity (%)
20	50
25	60
30	70

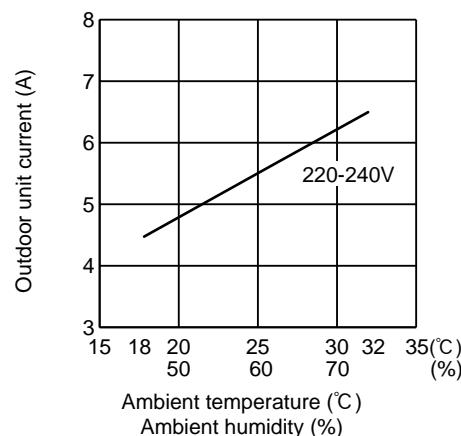
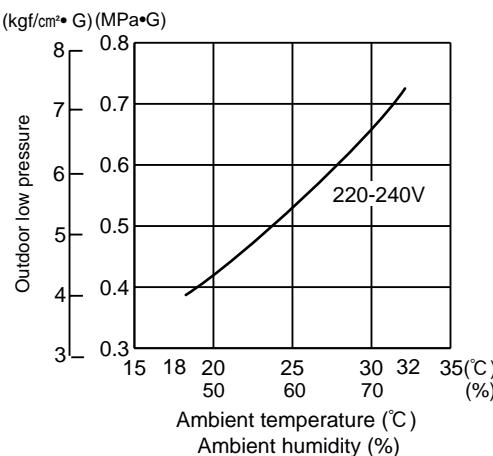
② Air flow should be set at MAX..

③ The unit of pressure has been changed to MPa on the international system of units(SI unit system).

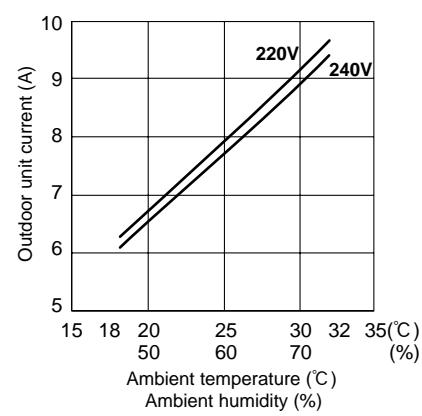
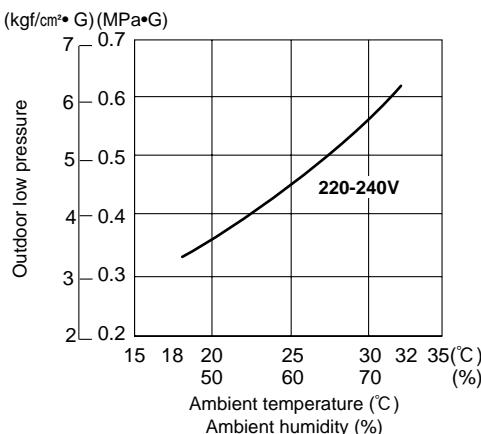
The converted score against the traditional unit system can be gotten according to the formula below.

$$1(\text{MPa} \cdot \text{G}) = 10.2(\text{kgf/cm}^2 \cdot \text{G})$$

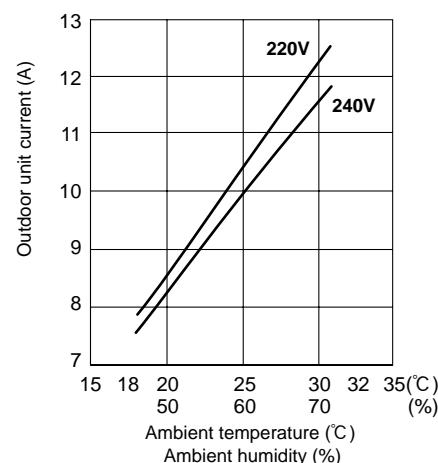
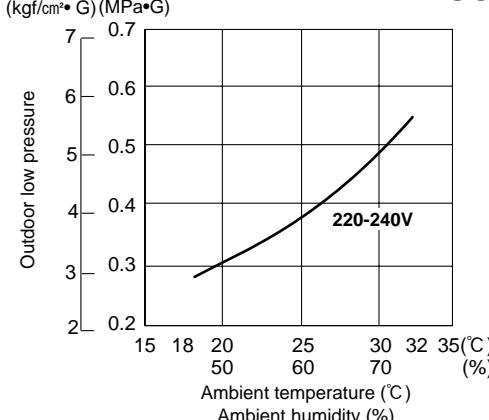
**MUCFH-13NV- E4**



**MUCFH-18NV- E3**



**MUCFH-24NV- E3**

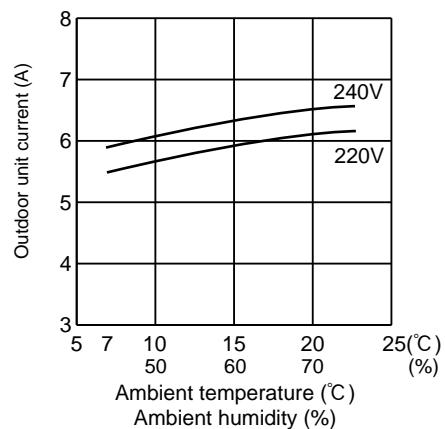


## HEAT operation

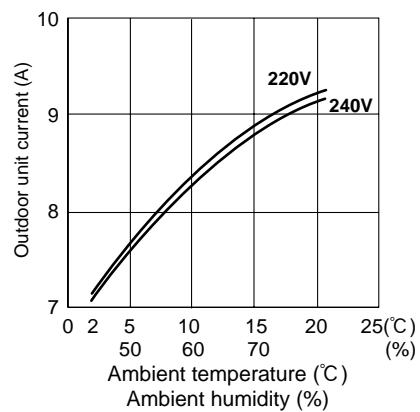
Condition Indoor : Dry bulb temerature 20.0°C  
Wet bulb temerature 14.5°C

Outdoor : Dry bulb temerature 7,15,20°C  
Wet bulb temerature 6,12,14.5°C

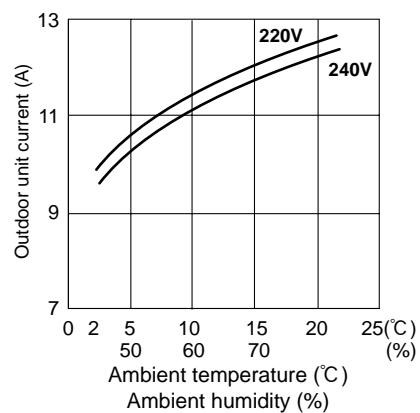
**MUCFH-13NV-** E4



**MUCFH-18NV-** E3



**MUCFH-24NV-** E4



## PERFORMANCE DATA

COOL operation(220V)

**MCFH-13NV -<sup>[E4]</sup> : MUCFH-13NV -<sup>[E4]</sup>**

CAPACITY :3.7(KW) SHF :0.72 INPUT :1310(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	4.35	2.35	0.54	1048	4.16	2.25	0.54	1100	4.00	2.16	0.54	1153	3.85	2.08	0.54	1205
21	20	4.53	1.90	0.42	1100	4.35	1.83	0.42	1166	4.22	1.77	0.42	1192	4.07	1.71	0.42	1245
22	18	4.35	2.52	0.58	1048	4.16	2.41	0.58	1100	4.00	2.32	0.58	1153	3.85	2.23	0.58	1205
22	20	4.53	2.08	0.46	1100	4.35	2.00	0.46	1166	4.22	1.94	0.46	1192	4.07	1.87	0.46	1245
22	22	4.72	1.60	0.34	1140	4.55	1.55	0.34	1212	4.44	1.51	0.34	1245	4.26	1.45	0.34	1297
23	18	4.35	2.70	0.62	1048	4.16	2.58	0.62	1100	4.00	2.48	0.62	1153	3.85	2.39	0.62	1205
23	20	4.53	2.27	0.50	1100	4.35	2.17	0.50	1166	4.22	2.11	0.50	1192	4.07	2.04	0.50	1245
23	22	4.72	1.79	0.38	1140	4.55	1.73	0.38	1212	4.44	1.69	0.38	1245	4.26	1.62	0.38	1297
24	18	4.35	2.87	0.66	1048	4.16	2.75	0.66	1100	4.00	2.64	0.66	1153	3.85	2.54	0.66	1205
24	20	4.53	2.45	0.54	1100	4.35	2.35	0.54	1166	4.22	2.28	0.54	1192	4.07	2.20	0.54	1245
24	22	4.72	1.98	0.42	1140	4.55	1.91	0.42	1212	4.44	1.86	0.42	1245	4.26	1.79	0.42	1297
24	24	4.96	1.49	0.30	1192	4.77	1.43	0.30	1258	4.66	1.40	0.30	1297	4.51	1.35	0.30	1362
25	18	4.35	3.04	0.70	1048	4.16	2.91	0.70	1100	4.00	2.80	0.70	1153	3.85	2.69	0.70	1205
25	20	4.53	2.63	0.58	1100	4.35	2.52	0.58	1166	4.22	2.45	0.58	1192	4.07	2.36	0.58	1245
25	22	4.72	2.17	0.46	1140	4.55	2.09	0.46	1212	4.44	2.04	0.46	1245	4.26	1.96	0.46	1297
25	24	4.96	1.69	0.34	1192	4.77	1.62	0.34	1258	4.66	1.59	0.34	1297	4.51	1.53	0.34	1362
26	18	4.35	3.22	0.74	1048	4.16	3.08	0.74	1100	4.00	2.96	0.74	1153	3.85	2.85	0.74	1205
26	20	4.53	2.81	0.62	1100	4.35	2.70	0.62	1166	4.22	2.62	0.62	1192	4.07	2.52	0.62	1245
26	22	4.72	2.36	0.50	1140	4.55	2.28	0.50	1212	4.44	2.22	0.50	1245	4.26	2.13	0.50	1297
26	24	4.96	1.88	0.38	1192	4.77	1.81	0.38	1258	4.66	1.77	0.38	1297	4.51	1.72	0.38	1362
26	26	5.11	1.33	0.26	1258	4.96	1.29	0.26	1323	4.88	1.27	0.26	1362	4.74	1.23	0.26	1402
27	18	4.35	3.39	0.78	1048	4.16	3.25	0.78	1100	4.00	3.12	0.78	1153	3.85	3.00	0.78	1205
27	20	4.53	2.99	0.66	1100	4.35	2.87	0.66	1166	4.22	2.78	0.66	1192	4.07	2.69	0.66	1245
27	22	4.72	2.55	0.54	1140	4.55	2.46	0.54	1212	4.44	2.40	0.54	1245	4.26	2.30	0.54	1297
27	24	4.96	2.08	0.42	1192	4.77	2.00	0.42	1258	4.66	1.96	0.42	1297	4.51	1.90	0.42	1362
27	26	5.11	1.53	0.30	1258	4.96	1.49	0.30	1323	4.88	1.47	0.30	1362	4.74	1.42	0.30	1402
28	18	4.35	3.56	0.82	1048	4.16	3.41	0.82	1100	4.00	3.28	0.82	1153	3.85	3.16	0.82	1205
28	20	4.53	3.17	0.70	1100	4.35	3.04	0.70	1166	4.22	2.95	0.70	1192	4.07	2.85	0.70	1245
28	22	4.72	2.74	0.58	1140	4.55	2.64	0.58	1212	4.44	2.58	0.58	1245	4.26	2.47	0.58	1297
28	24	4.96	2.28	0.46	1192	4.77	2.20	0.46	1258	4.66	2.14	0.46	1297	4.51	2.08	0.46	1362
28	26	5.11	1.74	0.34	1258	4.96	1.69	0.34	1323	4.88	1.66	0.34	1362	4.74	1.61	0.34	1402
29	18	4.35	3.74	0.86	1048	4.16	3.58	0.86	1100	4.00	3.44	0.86	1153	3.85	3.31	0.86	1205
29	20	4.53	3.35	0.74	1100	4.35	3.22	0.74	1166	4.22	3.12	0.74	1192	4.07	3.01	0.74	1245
29	22	4.72	2.92	0.62	1140	4.55	2.82	0.62	1212	4.44	2.75	0.62	1245	4.26	2.64	0.62	1297
29	24	4.96	2.48	0.50	1192	4.77	2.39	0.50	1258	4.66	2.33	0.50	1297	4.51	2.26	0.50	1362
29	26	5.11	1.94	0.38	1258	4.96	1.88	0.38	1323	4.88	1.86	0.38	1362	4.74	1.80	0.38	1402
30	18	4.35	3.91	0.90	1048	4.16	3.75	0.90	1100	4.00	3.60	0.90	1153	3.85	3.46	0.90	1205
30	20	4.53	3.54	0.78	1100	4.35	3.39	0.78	1166	4.22	3.29	0.78	1192	4.07	3.17	0.78	1245
30	22	4.72	3.11	0.66	1140	4.55	3.00	0.66	1212	4.44	2.93	0.66	1245	4.26	2.81	0.66	1297
30	24	4.96	2.68	0.54	1192	4.77	2.58	0.54	1258	4.66	2.52	0.54	1297	4.51	2.44	0.54	1362
30	26	5.11	2.14	0.42	1258	4.96	2.08	0.42	1323	4.88	2.05	0.42	1362	4.74	1.99	0.42	1402
31	18	4.35	4.09	0.94	1048	4.16	3.91	0.94	1100	4.00	3.76	0.94	1153	3.85	3.62	0.94	1205
31	20	4.53	3.72	0.82	1100	4.35	3.56	0.82	1166	4.22	3.46	0.82	1192	4.07	3.34	0.82	1245
31	22	4.72	3.30	0.70	1140	4.55	3.19	0.70	1212	4.44	3.11	0.70	1245	4.26	2.98	0.70	1297
31	24	4.96	2.88	0.58	1192	4.77	2.77	0.58	1258	4.66	2.70	0.58	1297	4.51	2.62	0.58	1362
31	26	5.11	2.35	0.46	1258	4.96	2.28	0.46	1323	4.88	2.25	0.46	1362	4.74	2.18	0.46	1402
32	18	4.35	4.26	0.98	1048	4.16	4.08	0.98	1100	4.00	3.92	0.98	1153	3.85	3.77	0.98	1205
32	20	4.53	3.90	0.86	1100	4.35	3.74	0.86	1166	4.22	3.63	0.86	1192	4.07	3.50	0.86	1245
32	22	4.72	3.49	0.74	1140	4.55	3.37	0.74	1212	4.44	3.29	0.74	1245	4.26	3.15	0.74	1297
32	24	4.96	3.07	0.62	1192	4.77	2.96	0.62	1258	4.66	2.89	0.62	1297	4.51	2.80	0.62	1362
32	26	5.11	2.55	0.50	1258	4.96	2.48	0.50	1323	4.88	2.44	0.50	1362	4.74	2.37	0.50	1402

## PERFORMANCE DATA

COOL operation(220V)

MCFH-13NV -E4 : MUCFH-13NV -E4

CAPACITY :3.7(KW) SHF :0.72 INPUT :1310(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	3.63	1.96	0.54	1284	3.33	1.80	0.54	1362	3.20	1.73	0.54	1389	3.07	1.66	0.54	1415
21	20	3.81	1.60	0.42	1336	3.55	1.49	0.42	1402	3.42	1.44	0.42	1441	3.29	1.38	0.42	1480
22	18	3.63	2.10	0.58	1284	3.33	1.93	0.58	1362	3.20	1.86	0.58	1389	3.07	1.78	0.58	1415
22	20	3.81	1.75	0.46	1336	3.55	1.63	0.46	1402	3.42	1.57	0.46	1441	3.29	1.51	0.46	1480
22	22	4.03	1.37	0.34	1389	3.77	1.28	0.34	1467	3.64	1.24	0.34	1493	3.52	1.20	0.34	1520
23	18	3.63	2.25	0.62	1284	3.33	2.06	0.62	1362	3.20	1.98	0.62	1389	3.07	1.90	0.62	1415
23	20	3.81	1.91	0.50	1336	3.55	1.78	0.50	1402	3.42	1.71	0.50	1441	3.29	1.65	0.50	1480
23	22	4.03	1.53	0.38	1389	3.77	1.43	0.38	1467	3.64	1.38	0.38	1493	3.52	1.34	0.38	1520
24	18	3.63	2.39	0.66	1284	3.33	2.20	0.66	1362	3.20	2.11	0.66	1389	3.07	2.03	0.66	1415
24	20	3.81	2.06	0.54	1336	3.55	1.92	0.54	1402	3.42	1.85	0.54	1441	3.29	1.78	0.54	1480
24	22	4.03	1.69	0.42	1389	3.77	1.59	0.42	1467	3.64	1.53	0.42	1493	3.52	1.48	0.42	1520
24	24	4.26	1.28	0.30	1441	4.00	1.20	0.30	1507	3.89	1.17	0.30	1539	3.77	1.13	0.30	1572
25	18	3.63	2.54	0.70	1284	3.33	2.33	0.70	1362	3.20	2.24	0.70	1389	3.07	2.15	0.70	1415
25	20	3.81	2.21	0.58	1336	3.55	2.06	0.58	1402	3.42	1.99	0.58	1441	3.29	1.91	0.58	1480
25	22	4.03	1.86	0.46	1389	3.77	1.74	0.46	1467	3.64	1.68	0.46	1493	3.52	1.62	0.46	1520
25	24	4.26	1.45	0.34	1441	4.00	1.36	0.34	1507	3.89	1.32	0.34	1539	3.77	1.28	0.34	1572
26	18	3.63	2.68	0.74	1284	3.33	2.46	0.74	1362	3.20	2.37	0.74	1389	3.07	2.27	0.74	1415
26	20	3.81	2.36	0.62	1336	3.55	2.20	0.62	1402	3.42	2.12	0.62	1441	3.29	2.04	0.62	1480
26	22	4.03	2.02	0.50	1389	3.77	1.89	0.50	1467	3.64	1.82	0.50	1493	3.52	1.76	0.50	1520
26	24	4.26	1.62	0.38	1441	4.00	1.52	0.38	1507	3.89	1.48	0.38	1539	3.77	1.43	0.38	1572
26	26	4.48	1.16	0.26	1493	4.22	1.10	0.26	1559	4.09	1.06	0.26	1592	3.96	1.03	0.26	1624
27	18	3.63	2.83	0.78	1284	3.33	2.60	0.78	1362	3.20	2.50	0.78	1389	3.07	2.40	0.78	1415
27	20	3.81	2.52	0.66	1336	3.55	2.34	0.66	1402	3.42	2.26	0.66	1441	3.29	2.17	0.66	1480
27	22	4.03	2.18	0.54	1389	3.77	2.04	0.54	1467	3.64	1.97	0.54	1493	3.52	1.90	0.54	1520
27	24	4.26	1.79	0.42	1441	4.00	1.68	0.42	1507	3.89	1.63	0.42	1539	3.77	1.59	0.42	1572
27	26	4.48	1.34	0.30	1493	4.22	1.27	0.30	1559	4.09	1.23	0.30	1592	3.96	1.19	0.30	1624
28	18	3.63	2.97	0.82	1284	3.33	2.73	0.82	1362	3.20	2.62	0.82	1389	3.07	2.52	0.82	1415
28	20	3.81	2.67	0.70	1336	3.55	2.49	0.70	1402	3.42	2.40	0.70	1441	3.29	2.31	0.70	1480
28	22	4.03	2.34	0.58	1389	3.77	2.19	0.58	1467	3.64	2.11	0.58	1493	3.52	2.04	0.58	1520
28	24	4.26	1.96	0.46	1441	4.00	1.84	0.46	1507	3.89	1.79	0.46	1539	3.77	1.74	0.46	1572
28	26	4.48	1.52	0.34	1493	4.22	1.43	0.34	1559	4.09	1.39	0.34	1592	3.96	1.35	0.34	1624
29	18	3.63	3.12	0.86	1284	3.33	2.86	0.86	1362	3.20	2.75	0.86	1389	3.07	2.64	0.86	1415
29	20	3.81	2.82	0.74	1336	3.55	2.63	0.74	1402	3.42	2.53	0.74	1441	3.29	2.44	0.74	1480
29	22	4.03	2.50	0.62	1389	3.77	2.34	0.62	1467	3.64	2.26	0.62	1493	3.52	2.18	0.62	1520
29	24	4.26	2.13	0.50	1441	4.00	2.00	0.50	1507	3.89	1.94	0.50	1539	3.77	1.89	0.50	1572
29	26	4.48	1.70	0.38	1493	4.22	1.60	0.38	1559	4.09	1.55	0.38	1592	3.96	1.50	0.38	1624
30	18	3.63	3.26	0.90	1284	3.33	3.00	0.90	1362	3.20	2.88	0.90	1389	3.07	2.76	0.90	1415
30	20	3.81	2.97	0.78	1336	3.55	2.77	0.78	1402	3.42	2.67	0.78	1441	3.29	2.57	0.78	1480
30	22	4.03	2.66	0.66	1389	3.77	2.49	0.66	1467	3.64	2.41	0.66	1493	3.52	2.32	0.66	1520
30	24	4.26	2.30	0.54	1441	4.00	2.16	0.54	1507	3.89	2.10	0.54	1539	3.77	2.04	0.54	1572
30	26	4.48	1.88	0.42	1493	4.22	1.77	0.42	1559	4.09	1.72	0.42	1592	3.96	1.66	0.42	1624
31	18	3.63	3.41	0.94	1284	3.33	3.13	0.94	1362	3.20	3.01	0.94	1389	3.07	2.89	0.94	1415
31	20	3.81	3.13	0.82	1336	3.55	2.91	0.82	1402	3.42	2.81	0.82	1441	3.29	2.70	0.82	1480
31	22	4.03	2.82	0.70	1389	3.77	2.64	0.70	1467	3.64	2.55	0.70	1493	3.52	2.46	0.70	1520
31	24	4.26	2.47	0.58	1441	4.00	2.32	0.58	1507	3.89	2.25	0.58	1539	3.77	2.19	0.58	1572
31	26	4.48	2.06	0.46	1493	4.22	1.94	0.46	1559	4.09	1.88	0.46	1592	3.96	1.82	0.46	1624
32	18	3.63	3.55	0.98	1284	3.33	3.26	0.98	1362	3.20	3.14	0.98	1389	3.07	3.01	0.98	1415
32	20	3.81	3.28	0.86	1336	3.55	3.05	0.86	1402	3.42	2.94	0.86	1441	3.29	2.83	0.86	1480
32	22	4.03	2.98	0.74	1389	3.77	2.79	0.74	1467	3.64	2.70	0.74	1493	3.52	2.60	0.74	1520
32	24	4.26	2.64	0.62	1441	4.00	2.48	0.62	1507	3.89	2.41	0.62	1539	3.77	2.34	0.62	1572
32	26	4.48	2.24	0.50	1493	4.22	2.11	0.50	1559	4.09	2.04	0.50	1592	3.96	1.98	0.50	1624

## PERFORMANCE DATA

COOL operation(240V)

**MCFH-13NV -E4 : MUCFH-13NV -E4**

CAPACITY :3.7(KW) SHF :0.72 INPUT :1400(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	4.35	2.35	0.54	1120	4.16	2.25	0.54	1176	4.00	2.16	0.54	1232	3.85	2.08	0.54	1288
21	20	4.53	1.90	0.42	1176	4.35	1.83	0.42	1246	4.22	1.77	0.42	1274	4.07	1.71	0.42	1330
22	18	4.35	2.52	0.58	1120	4.16	2.41	0.58	1176	4.00	2.32	0.58	1232	3.85	2.23	0.58	1288
22	20	4.53	2.08	0.46	1176	4.35	2.00	0.46	1246	4.22	1.94	0.46	1274	4.07	1.87	0.46	1330
22	22	4.72	1.60	0.34	1218	4.55	1.55	0.34	1295	4.44	1.51	0.34	1330	4.26	1.45	0.34	1386
23	18	4.35	2.70	0.62	1120	4.16	2.58	0.62	1176	4.00	2.48	0.62	1232	3.85	2.39	0.62	1288
23	20	4.53	2.27	0.50	1176	4.35	2.17	0.50	1246	4.22	2.11	0.50	1274	4.07	2.04	0.50	1330
23	22	4.72	1.79	0.38	1218	4.55	1.73	0.38	1295	4.44	1.69	0.38	1330	4.26	1.62	0.38	1386
24	18	4.35	2.87	0.66	1120	4.16	2.75	0.66	1176	4.00	2.64	0.66	1232	3.85	2.54	0.66	1288
24	20	4.53	2.45	0.54	1176	4.35	2.35	0.54	1246	4.22	2.28	0.54	1274	4.07	2.20	0.54	1330
24	22	4.72	1.98	0.42	1218	4.55	1.91	0.42	1295	4.44	1.86	0.42	1330	4.26	1.79	0.42	1386
24	24	4.96	1.49	0.30	1274	4.77	1.43	0.30	1344	4.66	1.40	0.30	1386	4.51	1.35	0.30	1456
25	18	4.35	3.04	0.70	1120	4.16	2.91	0.70	1176	4.00	2.80	0.70	1232	3.85	2.69	0.70	1288
25	20	4.53	2.63	0.58	1176	4.35	2.52	0.58	1246	4.22	2.45	0.58	1274	4.07	2.36	0.58	1330
25	22	4.72	2.17	0.46	1218	4.55	2.09	0.46	1295	4.44	2.04	0.46	1330	4.26	1.96	0.46	1386
25	24	4.96	1.69	0.34	1274	4.77	1.62	0.34	1344	4.66	1.59	0.34	1386	4.51	1.53	0.34	1456
26	18	4.35	3.22	0.74	1120	4.16	3.08	0.74	1176	4.00	2.96	0.74	1232	3.85	2.85	0.74	1288
26	20	4.53	2.81	0.62	1176	4.35	2.70	0.62	1246	4.22	2.62	0.62	1274	4.07	2.52	0.62	1330
26	22	4.72	2.36	0.50	1218	4.55	2.28	0.50	1295	4.44	2.22	0.50	1330	4.26	2.13	0.50	1386
26	24	4.96	1.88	0.38	1274	4.77	1.81	0.38	1344	4.66	1.77	0.38	1386	4.51	1.72	0.38	1456
26	26	5.11	1.33	0.26	1344	4.96	1.29	0.26	1414	4.88	1.27	0.26	1456	4.74	1.23	0.26	1498
27	18	4.35	3.39	0.78	1120	4.16	3.25	0.78	1176	4.00	3.12	0.78	1232	3.85	3.00	0.78	1288
27	20	4.53	2.99	0.66	1176	4.35	2.87	0.66	1246	4.22	2.78	0.66	1274	4.07	2.69	0.66	1330
27	22	4.72	2.55	0.54	1218	4.55	2.46	0.54	1295	4.44	2.40	0.54	1330	4.26	2.30	0.54	1386
27	24	4.96	2.08	0.42	1274	4.77	2.00	0.42	1344	4.66	1.96	0.42	1386	4.51	1.90	0.42	1456
27	26	5.11	1.53	0.30	1344	4.96	1.49	0.30	1414	4.88	1.47	0.30	1456	4.74	1.42	0.30	1498
28	18	4.35	3.56	0.82	1120	4.16	3.41	0.82	1176	4.00	3.28	0.82	1232	3.85	3.16	0.82	1288
28	20	4.53	3.17	0.70	1176	4.35	3.04	0.70	1246	4.22	2.95	0.70	1274	4.07	2.85	0.70	1330
28	22	4.72	2.74	0.58	1218	4.55	2.64	0.58	1295	4.44	2.58	0.58	1330	4.26	2.47	0.58	1386
28	24	4.96	2.28	0.46	1274	4.77	2.20	0.46	1344	4.66	2.14	0.46	1386	4.51	2.08	0.46	1456
28	26	5.11	1.74	0.34	1344	4.96	1.69	0.34	1414	4.88	1.66	0.34	1456	4.74	1.61	0.34	1498
29	18	4.35	3.74	0.86	1120	4.16	3.58	0.86	1176	4.00	3.44	0.86	1232	3.85	3.31	0.86	1288
29	20	4.53	3.35	0.74	1176	4.35	3.22	0.74	1246	4.22	3.12	0.74	1274	4.07	3.01	0.74	1330
29	22	4.72	2.92	0.62	1218	4.55	2.82	0.62	1295	4.44	2.75	0.62	1330	4.26	2.64	0.62	1386
29	24	4.96	2.48	0.50	1274	4.77	2.39	0.50	1344	4.66	2.33	0.50	1386	4.51	2.26	0.50	1456
29	26	5.11	1.94	0.38	1344	4.96	1.88	0.38	1414	4.88	1.86	0.38	1456	4.74	1.80	0.38	1498
30	18	4.35	3.91	0.90	1120	4.16	3.75	0.90	1176	4.00	3.60	0.90	1232	3.85	3.46	0.90	1288
30	20	4.53	3.54	0.78	1176	4.35	3.39	0.78	1246	4.22	3.29	0.78	1274	4.07	3.17	0.78	1330
30	22	4.72	3.11	0.66	1218	4.55	3.00	0.66	1295	4.44	2.93	0.66	1330	4.26	2.81	0.66	1386
30	24	4.96	2.68	0.54	1274	4.77	2.58	0.54	1344	4.66	2.52	0.54	1386	4.51	2.44	0.54	1456
30	26	5.11	2.14	0.42	1344	4.96	2.08	0.42	1414	4.88	2.05	0.42	1456	4.74	1.99	0.42	1498
31	18	4.35	4.09	0.94	1120	4.16	3.91	0.94	1176	4.00	3.76	0.94	1232	3.85	3.62	0.94	1288
31	20	4.53	3.72	0.82	1176	4.35	3.56	0.82	1246	4.22	3.46	0.82	1274	4.07	3.34	0.82	1330
31	22	4.72	3.30	0.70	1218	4.55	3.19	0.70	1295	4.44	3.11	0.70	1330	4.26	2.98	0.70	1386
31	24	4.96	2.88	0.58	1274	4.77	2.77	0.58	1344	4.66	2.70	0.58	1386	4.51	2.62	0.58	1456
31	26	5.11	2.35	0.46	1344	4.96	2.28	0.46	1414	4.88	2.25	0.46	1456	4.74	2.18	0.46	1498
32	18	4.35	4.26	0.98	1120	4.16	4.08	0.98	1176	4.00	3.92	0.98	1232	3.85	3.77	0.98	1288
32	20	4.53	3.90	0.86	1176	4.35	3.74	0.86	1246	4.22	3.63	0.86	1274	4.07	3.50	0.86	1330
32	22	4.72	3.49	0.74	1218	4.55	3.37	0.74	1295	4.44	3.29	0.74	1330	4.26	3.15	0.74	1386
32	24	4.96	3.07	0.62	1274	4.77	2.96	0.62	1344	4.66	2.89	0.62	1386	4.51	2.80	0.62	1456
32	26	5.11	2.55	0.50	1344	4.96	2.48	0.50	1414	4.88	2.44	0.50	1456	4.74	2.37	0.50	1498

## PERFORMANCE DATA

COOL operation(240V)

MCFH-13NV -E4 : MUCFH-13NV -E4

CAPACITY :3.7(KW) SHF :0.72 INPUT :1400(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	3.63	1.96	0.54	1372	3.33	1.80	0.54	1456	3.20	1.73	0.54	1484	3.07	1.66	0.54	1512
21	20	3.81	1.60	0.42	1428	3.55	1.49	0.42	1498	3.42	1.44	0.42	1540	3.29	1.38	0.42	1582
22	18	3.63	2.10	0.58	1372	3.33	1.93	0.58	1456	3.20	1.86	0.58	1484	3.07	1.78	0.58	1512
22	20	3.81	1.75	0.46	1428	3.55	1.63	0.46	1498	3.42	1.57	0.46	1540	3.29	1.51	0.46	1582
22	22	4.03	1.37	0.34	1484	3.77	1.28	0.34	1568	3.64	1.24	0.34	1596	3.52	1.20	0.34	1624
23	18	3.63	2.25	0.62	1372	3.33	2.06	0.62	1456	3.20	1.98	0.62	1484	3.07	1.90	0.62	1512
23	20	3.81	1.91	0.50	1428	3.55	1.78	0.50	1498	3.42	1.71	0.50	1540	3.29	1.65	0.50	1582
23	22	4.03	1.53	0.38	1484	3.77	1.43	0.38	1568	3.64	1.38	0.38	1596	3.52	1.34	0.38	1624
24	18	3.63	2.39	0.66	1372	3.33	2.20	0.66	1456	3.20	2.11	0.66	1484	3.07	2.03	0.66	1512
24	20	3.81	2.06	0.54	1428	3.55	1.92	0.54	1498	3.42	1.85	0.54	1540	3.29	1.78	0.54	1582
24	22	4.03	1.69	0.42	1484	3.77	1.59	0.42	1568	3.64	1.53	0.42	1596	3.52	1.48	0.42	1624
24	24	4.26	1.28	0.30	1540	4.00	1.20	0.30	1610	3.89	1.17	0.30	1645	3.77	1.13	0.30	1680
25	18	3.63	2.54	0.70	1372	3.33	2.33	0.70	1456	3.20	2.24	0.70	1484	3.07	2.15	0.70	1512
25	20	3.81	2.21	0.58	1428	3.55	2.06	0.58	1498	3.42	1.99	0.58	1540	3.29	1.91	0.58	1582
25	22	4.03	1.86	0.46	1484	3.77	1.74	0.46	1568	3.64	1.68	0.46	1596	3.52	1.62	0.46	1624
25	24	4.26	1.45	0.34	1540	4.00	1.36	0.34	1610	3.89	1.32	0.34	1645	3.77	1.28	0.34	1680
26	18	3.63	2.68	0.74	1372	3.33	2.46	0.74	1456	3.20	2.37	0.74	1484	3.07	2.27	0.74	1512
26	20	3.81	2.36	0.62	1428	3.55	2.20	0.62	1498	3.42	2.12	0.62	1540	3.29	2.04	0.62	1582
26	22	4.03	2.02	0.50	1484	3.77	1.89	0.50	1568	3.64	1.82	0.50	1596	3.52	1.76	0.50	1624
26	24	4.26	1.62	0.38	1540	4.00	1.52	0.38	1610	3.89	1.48	0.38	1645	3.77	1.43	0.38	1680
26	26	4.48	1.16	0.26	1596	4.22	1.10	0.26	1666	4.09	1.06	0.26	1701	3.96	1.03	0.26	1736
27	18	3.63	2.83	0.78	1372	3.33	2.60	0.78	1456	3.20	2.50	0.78	1484	3.07	2.40	0.78	1512
27	20	3.81	2.52	0.66	1428	3.55	2.34	0.66	1498	3.42	2.26	0.66	1540	3.29	2.17	0.66	1582
27	22	4.03	2.18	0.54	1484	3.77	2.04	0.54	1568	3.64	1.97	0.54	1596	3.52	1.90	0.54	1624
27	24	4.26	1.79	0.42	1540	4.00	1.68	0.42	1610	3.89	1.63	0.42	1645	3.77	1.59	0.42	1680
27	26	4.48	1.34	0.30	1596	4.22	1.27	0.30	1666	4.09	1.23	0.30	1701	3.96	1.19	0.30	1736
28	18	3.63	2.97	0.82	1372	3.33	2.73	0.82	1456	3.20	2.62	0.82	1484	3.07	2.52	0.82	1512
28	20	3.81	2.67	0.70	1428	3.55	2.49	0.70	1498	3.42	2.40	0.70	1540	3.29	2.31	0.70	1582
28	22	4.03	2.34	0.58	1484	3.77	2.19	0.58	1568	3.64	2.11	0.58	1596	3.52	2.04	0.58	1624
28	24	4.26	1.96	0.46	1540	4.00	1.84	0.46	1610	3.89	1.79	0.46	1645	3.77	1.74	0.46	1680
28	26	4.48	1.52	0.34	1596	4.22	1.43	0.34	1666	4.09	1.39	0.34	1701	3.96	1.35	0.34	1736
29	18	3.63	3.12	0.86	1372	3.33	2.86	0.86	1456	3.20	2.75	0.86	1484	3.07	2.64	0.86	1512
29	20	3.81	2.82	0.74	1428	3.55	2.63	0.74	1498	3.42	2.53	0.74	1540	3.29	2.44	0.74	1582
29	22	4.03	2.50	0.62	1484	3.77	2.34	0.62	1568	3.64	2.26	0.62	1596	3.52	2.18	0.62	1624
29	24	4.26	2.13	0.50	1540	4.00	2.00	0.50	1610	3.89	1.94	0.50	1645	3.77	1.89	0.50	1680
29	26	4.48	1.70	0.38	1596	4.22	1.60	0.38	1666	4.09	1.55	0.38	1701	3.96	1.50	0.38	1736
30	18	3.63	3.26	0.90	1372	3.33	3.00	0.90	1456	3.20	2.88	0.90	1484	3.07	2.76	0.90	1512
30	20	3.81	2.97	0.78	1428	3.55	2.77	0.78	1498	3.42	2.67	0.78	1540	3.29	2.57	0.78	1582
30	22	4.03	2.66	0.66	1484	3.77	2.49	0.66	1568	3.64	2.41	0.66	1596	3.52	2.32	0.66	1624
30	24	4.26	2.30	0.54	1540	4.00	2.16	0.54	1610	3.89	2.10	0.54	1645	3.77	2.04	0.54	1680
30	26	4.48	1.88	0.42	1596	4.22	1.77	0.42	1666	4.09	1.72	0.42	1701	3.96	1.66	0.42	1736
31	18	3.63	3.41	0.94	1372	3.33	3.13	0.94	1456	3.20	3.01	0.94	1484	3.07	2.89	0.94	1512
31	20	3.81	3.13	0.82	1428	3.55	2.91	0.82	1498	3.42	2.81	0.82	1540	3.29	2.70	0.82	1582
31	22	4.03	2.82	0.70	1484	3.77	2.64	0.70	1568	3.64	2.55	0.70	1596	3.52	2.46	0.70	1624
31	24	4.26	2.47	0.58	1540	4.00	2.32	0.58	1610	3.89	2.25	0.58	1645	3.77	2.19	0.58	1680
31	26	4.48	2.06	0.46	1596	4.22	1.94	0.46	1666	4.09	1.88	0.46	1701	3.96	1.82	0.46	1736
32	18	3.63	3.55	0.98	1372	3.33	3.26	0.98	1456	3.20	3.14	0.98	1484	3.07	3.01	0.98	1512
32	20	3.81	3.28	0.86	1428	3.55	3.05	0.86	1498	3.42	2.94	0.86	1540	3.29	2.83	0.86	1582
32	22	4.03	2.98	0.74	1484	3.77	2.79	0.74	1568	3.64	2.70	0.74	1596	3.52	2.60	0.74	1624
32	24	4.26	2.64	0.62	1540	4.00	2.48	0.62	1610	3.89	2.41	0.62	1645	3.77	2.34	0.62	1680
32	26	4.48	2.24	0.50	1596	4.22	2.11	0.50	1666	4.09	2.04	0.50	1701	3.96	1.98	0.50	1736

## PERFORMANCE DATA

COOL operation(220V)

**MCFH-18NV -E3 : MUCFH-18NV -E3**

CAPACITY :5.0(KW) SHF :0.64 INPUT :2030(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.88	2.70	0.46	1624	5.63	2.59	0.46	1705	5.40	2.48	0.46	1786	5.20	2.39	0.46	1868
21	20	6.13	2.08	0.34	1705	5.88	2.00	0.34	1807	5.70	1.94	0.34	1847	5.50	1.87	0.34	1929
22	18	5.88	2.94	0.50	1624	5.63	2.81	0.50	1705	5.40	2.70	0.50	1786	5.20	2.60	0.50	1868
22	20	6.13	2.33	0.38	1705	5.88	2.23	0.38	1807	5.70	2.17	0.38	1847	5.50	2.09	0.38	1929
22	22	6.38	1.66	0.26	1766	6.15	1.60	0.26	1878	6.00	1.56	0.26	1929	5.75	1.50	0.26	2010
23	18	5.88	3.17	0.54	1624	5.63	3.04	0.54	1705	5.40	2.92	0.54	1786	5.20	2.81	0.54	1868
23	20	6.13	2.57	0.42	1705	5.88	2.47	0.42	1807	5.70	2.39	0.42	1847	5.50	2.31	0.42	1929
23	22	6.38	1.91	0.30	1766	6.15	1.85	0.30	1878	6.00	1.80	0.30	1929	5.75	1.73	0.30	2010
24	18	5.88	3.41	0.58	1624	5.63	3.26	0.58	1705	5.40	3.13	0.58	1786	5.20	3.02	0.58	1868
24	20	6.13	2.82	0.46	1705	5.88	2.70	0.46	1807	5.70	2.62	0.46	1847	5.50	2.53	0.46	1929
24	22	6.38	2.17	0.34	1766	6.15	2.09	0.34	1878	6.00	2.04	0.34	1929	5.75	1.96	0.34	2010
24	24	6.70	1.47	0.22	1847	6.45	1.42	0.22	1949	6.30	1.39	0.22	2010	6.10	1.34	0.22	2111
25	18	5.88	3.64	0.62	1624	5.63	3.49	0.62	1705	5.40	3.35	0.62	1786	5.20	3.22	0.62	1868
25	20	6.13	3.06	0.50	1705	5.88	2.94	0.50	1807	5.70	2.85	0.50	1847	5.50	2.75	0.50	1929
25	22	6.38	2.42	0.38	1766	6.15	2.34	0.38	1878	6.00	2.28	0.38	1929	5.75	2.19	0.38	2010
25	24	6.70	1.74	0.26	1847	6.45	1.68	0.26	1949	6.30	1.64	0.26	2010	6.10	1.59	0.26	2111
26	18	5.88	3.88	0.66	1624	5.63	3.71	0.66	1705	5.40	3.56	0.66	1786	5.20	3.43	0.66	1868
26	20	6.13	3.31	0.54	1705	5.88	3.17	0.54	1807	5.70	3.08	0.54	1847	5.50	2.97	0.54	1929
26	22	6.38	2.68	0.42	1766	6.15	2.58	0.42	1878	6.00	2.52	0.42	1929	5.75	2.42	0.42	2010
26	24	6.70	2.01	0.30	1847	6.45	1.94	0.30	1949	6.30	1.89	0.30	2010	6.10	1.83	0.30	2111
26	26	6.90	1.24	0.18	1949	6.70	1.21	0.18	2050	6.60	1.19	0.18	2111	6.40	1.15	0.18	2172
27	18	5.88	4.11	0.70	1624	5.63	3.94	0.70	1705	5.40	3.78	0.70	1786	5.20	3.64	0.70	1868
27	20	6.13	3.55	0.58	1705	5.88	3.41	0.58	1807	5.70	3.31	0.58	1847	5.50	3.19	0.58	1929
27	22	6.38	2.93	0.46	1766	6.15	2.83	0.46	1878	6.00	2.76	0.46	1929	5.75	2.65	0.46	2010
27	24	6.70	2.28	0.34	1847	6.45	2.19	0.34	1949	6.30	2.14	0.34	2010	6.10	2.07	0.34	2111
27	26	6.90	1.52	0.22	1949	6.70	1.47	0.22	2050	6.60	1.45	0.22	2111	6.40	1.41	0.22	2172
28	18	5.88	4.35	0.74	1624	5.63	4.16	0.74	1705	5.40	4.00	0.74	1786	5.20	3.85	0.74	1868
28	20	6.13	3.80	0.62	1705	5.88	3.64	0.62	1807	5.70	3.53	0.62	1847	5.50	3.41	0.62	1929
28	22	6.38	3.19	0.50	1766	6.15	3.08	0.50	1878	6.00	3.00	0.50	1929	5.75	2.88	0.50	2010
28	24	6.70	2.55	0.38	1847	6.45	2.45	0.38	1949	6.30	2.39	0.38	2010	6.10	2.32	0.38	2111
28	26	6.90	1.79	0.26	1949	6.70	1.74	0.26	2050	6.60	1.72	0.26	2111	6.40	1.66	0.26	2172
29	18	5.88	4.58	0.78	1624	5.63	4.39	0.78	1705	5.40	4.21	0.78	1786	5.20	4.06	0.78	1868
29	20	6.13	4.04	0.66	1705	5.88	3.88	0.66	1807	5.70	3.76	0.66	1847	5.50	3.63	0.66	1929
29	22	6.38	3.44	0.54	1766	6.15	3.32	0.54	1878	6.00	3.24	0.54	1929	5.75	3.11	0.54	2010
29	24	6.70	2.81	0.42	1847	6.45	2.71	0.42	1949	6.30	2.65	0.42	2010	6.10	2.56	0.42	2111
29	26	6.90	2.07	0.30	1949	6.70	2.01	0.30	2050	6.60	1.98	0.30	2111	6.40	1.92	0.30	2172
30	18	5.88	4.82	0.82	1624	5.63	4.61	0.82	1705	5.40	4.43	0.82	1786	5.20	4.26	0.82	1868
30	20	6.13	4.29	0.70	1705	5.88	4.11	0.70	1807	5.70	3.99	0.70	1847	5.50	3.85	0.70	1929
30	22	6.38	3.70	0.58	1766	6.15	3.57	0.58	1878	6.00	3.48	0.58	1929	5.75	3.34	0.58	2010
30	24	6.70	3.08	0.46	1847	6.45	2.97	0.46	1949	6.30	2.90	0.46	2010	6.10	2.81	0.46	2111
30	26	6.90	2.35	0.34	1949	6.70	2.28	0.34	2050	6.60	2.24	0.34	2111	6.40	2.18	0.34	2172
31	18	5.88	5.05	0.86	1624	5.63	4.84	0.86	1705	5.40	4.64	0.86	1786	5.20	4.47	0.86	1868
31	20	6.13	4.53	0.74	1705	5.88	4.35	0.74	1807	5.70	4.22	0.74	1847	5.50	4.07	0.74	1929
31	22	6.38	3.95	0.62	1766	6.15	3.81	0.62	1878	6.00	3.72	0.62	1929	5.75	3.57	0.62	2010
31	24	6.70	3.35	0.50	1847	6.45	3.23	0.50	1949	6.30	3.15	0.50	2010	6.10	3.05	0.50	2111
31	26	6.90	2.62	0.38	1949	6.70	2.55	0.38	2050	6.60	2.51	0.38	2111	6.40	2.43	0.38	2172
32	18	5.88	5.29	0.90	1624	5.63	5.06	0.90	1705	5.40	4.86	0.90	1786	5.20	4.68	0.90	1868
32	20	6.13	4.78	0.78	1705	5.88	4.58	0.78	1807	5.70	4.45	0.78	1847	5.50	4.29	0.78	1929
32	22	6.38	4.21	0.66	1766	6.15	4.06	0.66	1878	6.00	3.96	0.66	1929	5.75	3.80	0.66	2010
32	24	6.70	3.62	0.54	1847	6.45	3.48	0.54	1949	6.30	3.40	0.54	2010	6.10	3.29	0.54	2111
32	26	6.90	2.90	0.42	1949	6.70	2.81	0.42	2050	6.60	2.77	0.42	2111	6.40	2.69	0.42	2172

## PERFORMANCE DATA

COOL operation(220V)

**MCFH-18NV -<sub>E3</sub> : MUCFH-18NV -<sub>E3</sub>**

CAPACITY :5.0(KW) SHF :0.64 INPUT :2030(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	4.90	2.25	0.46	1989	4.50	2.07	0.46	2111	4.33	1.99	0.46	2152	4.15	1.91	0.46	2192
21	20	5.15	1.75	0.34	2071	4.80	1.63	0.34	2172	4.63	1.57	0.34	2233	4.45	1.51	0.34	2294
22	18	4.90	2.45	0.50	1989	4.50	2.25	0.50	2111	4.33	2.16	0.50	2152	4.15	2.08	0.50	2192
22	20	5.15	1.96	0.38	2071	4.80	1.82	0.38	2172	4.63	1.76	0.38	2233	4.45	1.69	0.38	2294
22	22	5.45	1.42	0.26	2152	5.10	1.33	0.26	2274	4.93	1.28	0.26	2314	4.75	1.24	0.26	2355
23	18	4.90	2.65	0.54	1989	4.50	2.43	0.54	2111	4.33	2.34	0.54	2152	4.15	2.24	0.54	2192
23	20	5.15	2.16	0.42	2071	4.80	2.02	0.42	2172	4.63	1.94	0.42	2233	4.45	1.87	0.42	2294
23	22	5.45	1.64	0.30	2152	5.10	1.53	0.30	2274	4.93	1.48	0.30	2314	4.75	1.43	0.30	2355
24	18	4.90	2.84	0.58	1989	4.50	2.61	0.58	2111	4.33	2.51	0.58	2152	4.15	2.41	0.58	2192
24	20	5.15	2.37	0.46	2071	4.80	2.21	0.46	2172	4.63	2.13	0.46	2233	4.45	2.05	0.46	2294
24	22	5.45	1.85	0.34	2152	5.10	1.73	0.34	2274	4.93	1.67	0.34	2314	4.75	1.62	0.34	2355
24	24	5.75	1.27	0.22	2233	5.40	1.19	0.22	2335	5.25	1.16	0.22	2385	5.10	1.12	0.22	2436
25	18	4.90	3.04	0.62	1989	4.50	2.79	0.62	2111	4.33	2.68	0.62	2152	4.15	2.57	0.62	2192
25	20	5.15	2.58	0.50	2071	4.80	2.40	0.50	2172	4.63	2.31	0.50	2233	4.45	2.23	0.50	2294
25	22	5.45	2.07	0.38	2152	5.10	1.94	0.38	2274	4.93	1.87	0.38	2314	4.75	1.81	0.38	2355
25	24	5.75	1.50	0.26	2233	5.40	1.40	0.26	2335	5.25	1.37	0.26	2385	5.10	1.33	0.26	2436
26	18	4.90	3.23	0.66	1989	4.50	2.97	0.66	2111	4.33	2.85	0.66	2152	4.15	2.74	0.66	2192
26	20	5.15	2.78	0.54	2071	4.80	2.59	0.54	2172	4.63	2.50	0.54	2233	4.45	2.40	0.54	2294
26	22	5.45	2.29	0.42	2152	5.10	2.14	0.42	2274	4.93	2.07	0.42	2314	4.75	2.00	0.42	2355
26	24	5.75	1.73	0.30	2233	5.40	1.62	0.30	2335	5.25	1.58	0.30	2385	5.10	1.53	0.30	2436
26	26	6.05	1.09	0.18	2314	5.70	1.03	0.18	2416	5.53	0.99	0.18	2466	5.35	0.96	0.18	2517
27	18	4.90	3.43	0.70	1989	4.50	3.15	0.70	2111	4.33	3.03	0.70	2152	4.15	2.91	0.70	2192
27	20	5.15	2.99	0.58	2071	4.80	2.78	0.58	2172	4.63	2.68	0.58	2233	4.45	2.58	0.58	2294
27	22	5.45	2.51	0.46	2152	5.10	2.35	0.46	2274	4.93	2.27	0.46	2314	4.75	2.19	0.46	2355
27	24	5.75	1.96	0.34	2233	5.40	1.84	0.34	2335	5.25	1.79	0.34	2385	5.10	1.73	0.34	2436
27	26	6.05	1.33	0.22	2314	5.70	1.25	0.22	2416	5.53	1.22	0.22	2466	5.35	1.18	0.22	2517
28	18	4.90	3.63	0.74	1989	4.50	3.33	0.74	2111	4.33	3.20	0.74	2152	4.15	3.07	0.74	2192
28	20	5.15	3.19	0.62	2071	4.80	2.98	0.62	2172	4.63	2.87	0.62	2233	4.45	2.76	0.62	2294
28	22	5.45	2.73	0.50	2152	5.10	2.55	0.50	2274	4.93	2.46	0.50	2314	4.75	2.38	0.50	2355
28	24	5.75	2.19	0.38	2233	5.40	2.05	0.38	2335	5.25	2.00	0.38	2385	5.10	1.94	0.38	2436
28	26	6.05	1.57	0.26	2314	5.70	1.48	0.26	2416	5.53	1.44	0.26	2466	5.35	1.39	0.26	2517
29	18	4.90	3.82	0.78	1989	4.50	3.51	0.78	2111	4.33	3.37	0.78	2152	4.15	3.24	0.78	2192
29	20	5.15	3.40	0.66	2071	4.80	3.17	0.66	2172	4.63	3.05	0.66	2233	4.45	2.94	0.66	2294
29	22	5.45	2.94	0.54	2152	5.10	2.75	0.54	2274	4.93	2.66	0.54	2314	4.75	2.57	0.54	2355
29	24	5.75	2.42	0.42	2233	5.40	2.27	0.42	2335	5.25	2.21	0.42	2385	5.10	2.14	0.42	2436
29	26	6.05	1.82	0.30	2314	5.70	1.71	0.30	2416	5.53	1.66	0.30	2466	5.35	1.61	0.30	2517
30	18	4.90	4.02	0.82	1989	4.50	3.69	0.82	2111	4.33	3.55	0.82	2152	4.15	3.40	0.82	2192
30	20	5.15	3.61	0.70	2071	4.80	3.36	0.70	2172	4.63	3.24	0.70	2233	4.45	3.12	0.70	2294
30	22	5.45	3.16	0.58	2152	5.10	2.96	0.58	2274	4.93	2.86	0.58	2314	4.75	2.76	0.58	2355
30	24	5.75	2.65	0.46	2233	5.40	2.48	0.46	2335	5.25	2.42	0.46	2385	5.10	2.35	0.46	2436
30	26	6.05	2.06	0.34	2314	5.70	1.94	0.34	2416	5.53	1.88	0.34	2466	5.35	1.82	0.34	2517
31	18	4.90	4.21	0.86	1989	4.50	3.87	0.86	2111	4.33	3.72	0.86	2152	4.15	3.57	0.86	2192
31	20	5.15	3.81	0.74	2071	4.80	3.55	0.74	2172	4.63	3.42	0.74	2233	4.45	3.29	0.74	2294
31	22	5.45	3.38	0.62	2152	5.10	3.16	0.62	2274	4.93	3.05	0.62	2314	4.75	2.95	0.62	2355
31	24	5.75	2.88	0.50	2233	5.40	2.70	0.50	2335	5.25	2.63	0.50	2385	5.10	2.55	0.50	2436
31	26	6.05	2.30	0.38	2314	5.70	2.17	0.38	2416	5.53	2.10	0.38	2466	5.35	2.03	0.38	2517
32	18	4.90	4.41	0.90	1989	4.50	4.05	0.90	2111	4.33	3.89	0.90	2152	4.15	3.74	0.90	2192
32	20	5.15	4.02	0.78	2071	4.80	3.74	0.78	2172	4.63	3.61	0.78	2233	4.45	3.47	0.78	2294
32	22	5.45	3.60	0.66	2152	5.10	3.37	0.66	2274	4.93	3.25	0.66	2314	4.75	3.14	0.66	2355
32	24	5.75	3.11	0.54	2233	5.40	2.92	0.54	2335	5.25	2.84	0.54	2385	5.10	2.75	0.54	2436
32	26	6.05	2.54	0.42	2314	5.70	2.39	0.42	2416	5.53	2.32	0.42	2466	5.35	2.25	0.42	2517

## PERFORMANCE DATA

COOL operation(240V)

**MCFH-18NV -E3 : MUCFH-18NV -E3**

CAPACITY :5.0(KW) SHF :0.64 INPUT :2120(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.88	2.70	0.46	1696	5.63	2.59	0.46	1781	5.40	2.48	0.46	1866	5.20	2.39	0.46	1950
21	20	6.13	2.08	0.34	1781	5.88	2.00	0.34	1887	5.70	1.94	0.34	1929	5.50	1.87	0.34	2014
22	18	5.88	2.94	0.50	1696	5.63	2.81	0.50	1781	5.40	2.70	0.50	1866	5.20	2.60	0.50	1950
22	20	6.13	2.33	0.38	1781	5.88	2.23	0.38	1887	5.70	2.17	0.38	1929	5.50	2.09	0.38	2014
22	22	6.38	1.66	0.26	1844	6.15	1.60	0.26	1961	6.00	1.56	0.26	2014	5.75	1.50	0.26	2099
23	18	5.88	3.17	0.54	1696	5.63	3.04	0.54	1781	5.40	2.92	0.54	1866	5.20	2.81	0.54	1950
23	20	6.13	2.57	0.42	1781	5.88	2.47	0.42	1887	5.70	2.39	0.42	1929	5.50	2.31	0.42	2014
23	22	6.38	1.91	0.30	1844	6.15	1.85	0.30	1961	6.00	1.80	0.30	2014	5.75	1.73	0.30	2099
24	18	5.88	3.41	0.58	1696	5.63	3.26	0.58	1781	5.40	3.13	0.58	1866	5.20	3.02	0.58	1950
24	20	6.13	2.82	0.46	1781	5.88	2.70	0.46	1887	5.70	2.62	0.46	1929	5.50	2.53	0.46	2014
24	22	6.38	2.17	0.34	1844	6.15	2.09	0.34	1961	6.00	2.04	0.34	2014	5.75	1.96	0.34	2099
24	24	6.70	1.47	0.22	1929	6.45	1.42	0.22	2035	6.30	1.39	0.22	2099	6.10	1.34	0.22	2205
25	18	5.88	3.64	0.62	1696	5.63	3.49	0.62	1781	5.40	3.35	0.62	1866	5.20	3.22	0.62	1950
25	20	6.13	3.06	0.50	1781	5.88	2.94	0.50	1887	5.70	2.85	0.50	1929	5.50	2.75	0.50	2014
25	22	6.38	2.42	0.38	1844	6.15	2.34	0.38	1961	6.00	2.28	0.38	2014	5.75	2.19	0.38	2099
25	24	6.70	1.74	0.26	1929	6.45	1.68	0.26	2035	6.30	1.64	0.26	2099	6.10	1.59	0.26	2205
26	18	5.88	3.88	0.66	1696	5.63	3.71	0.66	1781	5.40	3.56	0.66	1866	5.20	3.43	0.66	1950
26	20	6.13	3.31	0.54	1781	5.88	3.17	0.54	1887	5.70	3.08	0.54	1929	5.50	2.97	0.54	2014
26	22	6.38	2.68	0.42	1844	6.15	2.58	0.42	1961	6.00	2.52	0.42	2014	5.75	2.42	0.42	2099
26	24	6.70	2.01	0.30	1929	6.45	1.94	0.30	2035	6.30	1.89	0.30	2099	6.10	1.83	0.30	2205
26	26	6.90	1.24	0.18	2035	6.70	1.21	0.18	2141	6.60	1.19	0.18	2205	6.40	1.15	0.18	2268
27	18	5.88	4.11	0.70	1696	5.63	3.94	0.70	1781	5.40	3.78	0.70	1866	5.20	3.64	0.70	1950
27	20	6.13	3.55	0.58	1781	5.88	3.41	0.58	1887	5.70	3.31	0.58	1929	5.50	3.19	0.58	2014
27	22	6.38	2.93	0.46	1844	6.15	2.83	0.46	1961	6.00	2.76	0.46	2014	5.75	2.65	0.46	2099
27	24	6.70	2.28	0.34	1929	6.45	2.19	0.34	2035	6.30	2.14	0.34	2099	6.10	2.07	0.34	2205
27	26	6.90	1.52	0.22	2035	6.70	1.47	0.22	2141	6.60	1.45	0.22	2205	6.40	1.41	0.22	2268
28	18	5.88	4.35	0.74	1696	5.63	4.16	0.74	1781	5.40	4.00	0.74	1866	5.20	3.85	0.74	1950
28	20	6.13	3.80	0.62	1781	5.88	3.64	0.62	1887	5.70	3.53	0.62	1929	5.50	3.41	0.62	2014
28	22	6.38	3.19	0.50	1844	6.15	3.08	0.50	1961	6.00	3.00	0.50	2014	5.75	2.88	0.50	2099
28	24	6.70	2.55	0.38	1929	6.45	2.45	0.38	2035	6.30	2.39	0.38	2099	6.10	2.32	0.38	2205
28	26	6.90	1.79	0.26	2035	6.70	1.74	0.26	2141	6.60	1.72	0.26	2205	6.40	1.66	0.26	2268
29	18	5.88	4.58	0.78	1696	5.63	4.39	0.78	1781	5.40	4.21	0.78	1866	5.20	4.06	0.78	1950
29	20	6.13	4.04	0.66	1781	5.88	3.88	0.66	1887	5.70	3.76	0.66	1929	5.50	3.63	0.66	2014
29	22	6.38	3.44	0.54	1844	6.15	3.32	0.54	1961	6.00	3.24	0.54	2014	5.75	3.11	0.54	2099
29	24	6.70	2.81	0.42	1929	6.45	2.71	0.42	2035	6.30	2.65	0.42	2099	6.10	2.56	0.42	2205
29	26	6.90	2.07	0.30	2035	6.70	2.01	0.30	2141	6.60	1.98	0.30	2205	6.40	1.92	0.30	2268
30	18	5.88	4.82	0.82	1696	5.63	4.61	0.82	1781	5.40	4.43	0.82	1866	5.20	4.26	0.82	1950
30	20	6.13	4.29	0.70	1781	5.88	4.11	0.70	1887	5.70	3.99	0.70	1929	5.50	3.85	0.70	2014
30	22	6.38	3.70	0.58	1844	6.15	3.57	0.58	1961	6.00	3.48	0.58	2014	5.75	3.34	0.58	2099
30	24	6.70	3.08	0.46	1929	6.45	2.97	0.46	2035	6.30	2.90	0.46	2099	6.10	2.81	0.46	2205
30	26	6.90	2.35	0.34	2035	6.70	2.28	0.34	2141	6.60	2.24	0.34	2205	6.40	2.18	0.34	2268
31	18	5.88	5.05	0.86	1696	5.63	4.84	0.86	1781	5.40	4.64	0.86	1866	5.20	4.47	0.86	1950
31	20	6.13	4.53	0.74	1781	5.88	4.35	0.74	1887	5.70	4.22	0.74	1929	5.50	4.07	0.74	2014
31	22	6.38	3.95	0.62	1844	6.15	3.81	0.62	1961	6.00	3.72	0.62	2014	5.75	3.57	0.62	2099
31	24	6.70	3.35	0.50	1929	6.45	3.23	0.50	2035	6.30	3.15	0.50	2099	6.10	3.05	0.50	2205
31	26	6.90	2.62	0.38	2035	6.70	2.55	0.38	2141	6.60	2.51	0.38	2205	6.40	2.43	0.38	2268
32	18	5.88	5.29	0.90	1696	5.63	5.06	0.90	1781	5.40	4.86	0.90	1866	5.20	4.68	0.90	1950
32	20	6.13	4.78	0.78	1781	5.88	4.58	0.78	1887	5.70	4.45	0.78	1929	5.50	4.29	0.78	2014
32	22	6.38	4.21	0.66	1844	6.15	4.06	0.66	1961	6.00	3.96	0.66	2014	5.75	3.80	0.66	2099
32	24	6.70	3.62	0.54	1929	6.45	3.48	0.54	2035	6.30	3.40	0.54	2099	6.10	3.29	0.54	2205
32	26	6.90	2.90	0.42	2035	6.70	2.81	0.42	2141	6.60	2.77	0.42	2205	6.40	2.69	0.42	2268

## PERFORMANCE DATA

COOL operation(240V)

MCFH-18NV -<sup>E3</sup> : MUCFH-18NV -<sup>E3</sup>

CAPACITY :5.0(KW) SHF :0.64 INPUT :2120(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	4.90	2.25	0.46	2078	4.50	2.07	0.46	2205	4.33	1.99	0.46	2247	4.15	1.91	0.46	2290
21	20	5.15	1.75	0.34	2162	4.80	1.63	0.34	2268	4.63	1.57	0.34	2332	4.45	1.51	0.34	2396
22	18	4.90	2.45	0.50	2078	4.50	2.25	0.50	2205	4.33	2.16	0.50	2247	4.15	2.08	0.50	2290
22	20	5.15	1.96	0.38	2162	4.80	1.82	0.38	2268	4.63	1.76	0.38	2332	4.45	1.69	0.38	2396
22	22	5.45	1.42	0.26	2247	5.10	1.33	0.26	2374	4.93	1.28	0.26	2417	4.75	1.24	0.26	2459
23	18	4.90	2.65	0.54	2078	4.50	2.43	0.54	2205	4.33	2.34	0.54	2247	4.15	2.24	0.54	2290
23	20	5.15	2.16	0.42	2162	4.80	2.02	0.42	2268	4.63	1.94	0.42	2332	4.45	1.87	0.42	2396
23	22	5.45	1.64	0.30	2247	5.10	1.53	0.30	2374	4.93	1.48	0.30	2417	4.75	1.43	0.30	2459
24	18	4.90	2.84	0.58	2078	4.50	2.61	0.58	2205	4.33	2.51	0.58	2247	4.15	2.41	0.58	2290
24	20	5.15	2.37	0.46	2162	4.80	2.21	0.46	2268	4.63	2.13	0.46	2332	4.45	2.05	0.46	2396
24	22	5.45	1.85	0.34	2247	5.10	1.73	0.34	2374	4.93	1.67	0.34	2417	4.75	1.62	0.34	2459
24	24	5.75	1.27	0.22	2332	5.40	1.19	0.22	2438	5.25	1.16	0.22	2491	5.10	1.12	0.22	2544
25	18	4.90	3.04	0.62	2078	4.50	2.79	0.62	2205	4.33	2.68	0.62	2247	4.15	2.57	0.62	2290
25	20	5.15	2.58	0.50	2162	4.80	2.40	0.50	2268	4.63	2.31	0.50	2332	4.45	2.23	0.50	2396
25	22	5.45	2.07	0.38	2247	5.10	1.94	0.38	2374	4.93	1.87	0.38	2417	4.75	1.81	0.38	2459
25	24	5.75	1.50	0.26	2332	5.40	1.40	0.26	2438	5.25	1.37	0.26	2491	5.10	1.33	0.26	2544
26	18	4.90	3.23	0.66	2078	4.50	2.97	0.66	2205	4.33	2.85	0.66	2247	4.15	2.74	0.66	2290
26	20	5.15	2.78	0.54	2162	4.80	2.59	0.54	2268	4.63	2.50	0.54	2332	4.45	2.40	0.54	2396
26	22	5.45	2.29	0.42	2247	5.10	2.14	0.42	2374	4.93	2.07	0.42	2417	4.75	2.00	0.42	2459
26	24	5.75	1.73	0.30	2332	5.40	1.62	0.30	2438	5.25	1.58	0.30	2491	5.10	1.53	0.30	2544
26	26	6.05	1.09	0.18	2417	5.70	1.03	0.18	2523	5.53	0.99	0.18	2576	5.35	0.96	0.18	2629
27	18	4.90	3.43	0.70	2078	4.50	3.15	0.70	2205	4.33	3.03	0.70	2247	4.15	2.91	0.70	2290
27	20	5.15	2.99	0.58	2162	4.80	2.78	0.58	2268	4.63	2.68	0.58	2332	4.45	2.58	0.58	2396
27	22	5.45	2.51	0.46	2247	5.10	2.35	0.46	2374	4.93	2.27	0.46	2417	4.75	2.19	0.46	2459
27	24	5.75	1.96	0.34	2332	5.40	1.84	0.34	2438	5.25	1.79	0.34	2491	5.10	1.73	0.34	2544
27	26	6.05	1.33	0.22	2417	5.70	1.25	0.22	2523	5.53	1.22	0.22	2576	5.35	1.18	0.22	2629
28	18	4.90	3.63	0.74	2078	4.50	3.33	0.74	2205	4.33	3.20	0.74	2247	4.15	3.07	0.74	2290
28	20	5.15	3.19	0.62	2162	4.80	2.98	0.62	2268	4.63	2.87	0.62	2332	4.45	2.76	0.62	2396
28	22	5.45	2.73	0.50	2247	5.10	2.55	0.50	2374	4.93	2.46	0.50	2417	4.75	2.38	0.50	2459
28	24	5.75	2.19	0.38	2332	5.40	2.05	0.38	2438	5.25	2.00	0.38	2491	5.10	1.94	0.38	2544
28	26	6.05	1.57	0.26	2417	5.70	1.48	0.26	2523	5.53	1.44	0.26	2576	5.35	1.39	0.26	2629
29	18	4.90	3.82	0.78	2078	4.50	3.51	0.78	2205	4.33	3.37	0.78	2247	4.15	3.24	0.78	2290
29	20	5.15	3.40	0.66	2162	4.80	3.17	0.66	2268	4.63	3.05	0.66	2332	4.45	2.94	0.66	2396
29	22	5.45	2.94	0.54	2247	5.10	2.75	0.54	2374	4.93	2.66	0.54	2417	4.75	2.57	0.54	2459
29	24	5.75	2.42	0.42	2332	5.40	2.27	0.42	2438	5.25	2.21	0.42	2491	5.10	2.14	0.42	2544
29	26	6.05	1.82	0.30	2417	5.70	1.71	0.30	2523	5.53	1.66	0.30	2576	5.35	1.61	0.30	2629
30	18	4.90	4.02	0.82	2078	4.50	3.69	0.82	2205	4.33	3.55	0.82	2247	4.15	3.40	0.82	2290
30	20	5.15	3.61	0.70	2162	4.80	3.36	0.70	2268	4.63	3.24	0.70	2332	4.45	3.12	0.70	2396
30	22	5.45	3.16	0.58	2247	5.10	2.96	0.58	2374	4.93	2.86	0.58	2417	4.75	2.76	0.58	2459
30	24	5.75	2.65	0.46	2332	5.40	2.48	0.46	2438	5.25	2.42	0.46	2491	5.10	2.35	0.46	2544
30	26	6.05	2.06	0.34	2417	5.70	1.94	0.34	2523	5.53	1.88	0.34	2576	5.35	1.82	0.34	2629
31	18	4.90	4.21	0.86	2078	4.50	3.87	0.86	2205	4.33	3.72	0.86	2247	4.15	3.57	0.86	2290
31	20	5.15	3.81	0.74	2162	4.80	3.55	0.74	2268	4.63	3.42	0.74	2332	4.45	3.29	0.74	2396
31	22	5.45	3.38	0.62	2247	5.10	3.16	0.62	2374	4.93	3.05	0.62	2417	4.75	2.95	0.62	2459
31	24	5.75	2.88	0.50	2332	5.40	2.70	0.50	2438	5.25	2.63	0.50	2491	5.10	2.55	0.50	2544
31	26	6.05	2.30	0.38	2417	5.70	2.17	0.38	2523	5.53	2.10	0.38	2576	5.35	2.03	0.38	2629
32	18	4.90	4.41	0.90	2078	4.50	4.05	0.90	2205	4.33	3.89	0.90	2247	4.15	3.74	0.90	2290
32	20	5.15	4.02	0.78	2162	4.80	3.74	0.78	2268	4.63	3.61	0.78	2332	4.45	3.47	0.78	2396
32	22	5.45	3.60	0.66	2247	5.10	3.37	0.66	2374	4.93	3.25	0.66	2417	4.75	3.14	0.66	2459
32	24	5.75	3.11	0.54	2332	5.40	2.92	0.54	2438	5.25	2.84	0.54	2491	5.10	2.75	0.54	2544
32	26	6.05	2.54	0.42	2417	5.70	2.39	0.42	2523	5.53	2.32	0.42	2576	5.35	2.25	0.42	2629

## PERFORMANCE DATA

COOL operation(220V)

**MCFH-24NV -E3 : MUCFH-24NV -E3**

CAPACITY :6.0(KW) SHF :0.64 INPUT :2720(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		21				25				27							
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT				
21	18	7.05	3.24	0.46	2176	6.75	3.11	0.46	2285	6.48	2.98	0.46	2394	6.24	2.87	0.46	2502
21	20	7.35	2.50	0.34	2285	7.05	2.40	0.34	2421	6.84	2.33	0.34	2475	6.60	2.24	0.34	2584
22	18	7.05	3.53	0.50	2176	6.75	3.38	0.50	2285	6.48	3.24	0.50	2394	6.24	3.12	0.50	2502
22	20	7.35	2.79	0.38	2285	7.05	2.68	0.38	2421	6.84	2.60	0.38	2475	6.60	2.51	0.38	2584
22	22	7.65	1.99	0.26	2366	7.38	1.92	0.26	2516	7.20	1.87	0.26	2584	6.90	1.79	0.26	2693
23	18	7.05	3.81	0.54	2176	6.75	3.65	0.54	2285	6.48	3.50	0.54	2394	6.24	3.37	0.54	2502
23	20	7.35	3.09	0.42	2285	7.05	2.96	0.42	2421	6.84	2.87	0.42	2475	6.60	2.77	0.42	2584
23	22	7.65	2.30	0.30	2366	7.38	2.21	0.30	2516	7.20	2.16	0.30	2584	6.90	2.07	0.30	2693
24	18	7.05	4.09	0.58	2176	6.75	3.92	0.58	2285	6.48	3.76	0.58	2394	6.24	3.62	0.58	2502
24	20	7.35	3.38	0.46	2285	7.05	3.24	0.46	2421	6.84	3.15	0.46	2475	6.60	3.04	0.46	2584
24	22	7.65	2.60	0.34	2366	7.38	2.51	0.34	2516	7.20	2.45	0.34	2584	6.90	2.35	0.34	2693
24	24	8.04	1.77	0.22	2475	7.74	1.70	0.22	2611	7.56	1.66	0.22	2693	7.32	1.61	0.22	2829
25	18	7.05	4.37	0.62	2176	6.75	4.19	0.62	2285	6.48	4.02	0.62	2394	6.24	3.87	0.62	2502
25	20	7.35	3.68	0.50	2285	7.05	3.53	0.50	2421	6.84	3.42	0.50	2475	6.60	3.30	0.50	2584
25	22	7.65	2.91	0.38	2366	7.38	2.80	0.38	2516	7.20	2.74	0.38	2584	6.90	2.62	0.38	2693
25	24	8.04	2.09	0.26	2475	7.74	2.01	0.26	2611	7.56	1.97	0.26	2693	7.32	1.90	0.26	2829
26	18	7.05	4.65	0.66	2176	6.75	4.46	0.66	2285	6.48	4.28	0.66	2394	6.24	4.12	0.66	2502
26	20	7.35	3.97	0.54	2285	7.05	3.81	0.54	2421	6.84	3.69	0.54	2475	6.60	3.56	0.54	2584
26	22	7.65	3.21	0.42	2366	7.38	3.10	0.42	2516	7.20	3.02	0.42	2584	6.90	2.90	0.42	2693
26	24	8.04	2.41	0.30	2475	7.74	2.32	0.30	2611	7.56	2.27	0.30	2693	7.32	2.20	0.30	2829
26	26	8.28	1.49	0.18	2611	8.04	1.45	0.18	2747	7.92	1.43	0.18	2829	7.68	1.38	0.18	2910
27	18	7.05	4.94	0.70	2176	6.75	4.73	0.70	2285	6.48	4.54	0.70	2394	6.24	4.37	0.70	2502
27	20	7.35	4.26	0.58	2285	7.05	4.09	0.58	2421	6.84	3.97	0.58	2475	6.60	3.83	0.58	2584
27	22	7.65	3.52	0.46	2366	7.38	3.39	0.46	2516	7.20	3.31	0.46	2584	6.90	3.17	0.46	2693
27	24	8.04	2.73	0.34	2475	7.74	2.63	0.34	2611	7.56	2.57	0.34	2693	7.32	2.49	0.34	2829
27	26	8.28	1.82	0.22	2611	8.04	1.77	0.22	2747	7.92	1.74	0.22	2829	7.68	1.69	0.22	2910
28	18	7.05	5.22	0.74	2176	6.75	5.00	0.74	2285	6.48	4.80	0.74	2394	6.24	4.62	0.74	2502
28	20	7.35	4.56	0.62	2285	7.05	4.37	0.62	2421	6.84	4.24	0.62	2475	6.60	4.09	0.62	2584
28	22	7.65	3.83	0.50	2366	7.38	3.69	0.50	2516	7.20	3.60	0.50	2584	6.90	3.45	0.50	2693
28	24	8.04	3.06	0.38	2475	7.74	2.94	0.38	2611	7.56	2.87	0.38	2693	7.32	2.78	0.38	2829
28	26	8.28	2.15	0.26	2611	8.04	2.09	0.26	2747	7.92	2.06	0.26	2829	7.68	2.00	0.26	2910
29	18	7.05	5.50	0.78	2176	6.75	5.27	0.78	2285	6.48	5.05	0.78	2394	6.24	4.87	0.78	2502
29	20	7.35	4.85	0.66	2285	7.05	4.65	0.66	2421	6.84	4.51	0.66	2475	6.60	4.36	0.66	2584
29	22	7.65	4.13	0.54	2366	7.38	3.99	0.54	2516	7.20	3.89	0.54	2584	6.90	3.73	0.54	2693
29	24	8.04	3.38	0.42	2475	7.74	3.25	0.42	2611	7.56	3.18	0.42	2693	7.32	3.07	0.42	2829
29	26	8.28	2.48	0.30	2611	8.04	2.41	0.30	2747	7.92	2.38	0.30	2829	7.68	2.30	0.30	2910
30	18	7.05	5.78	0.82	2176	6.75	5.54	0.82	2285	6.48	5.31	0.82	2394	6.24	5.12	0.82	2502
30	20	7.35	5.15	0.70	2285	7.05	4.94	0.70	2421	6.84	4.79	0.70	2475	6.60	4.62	0.70	2584
30	22	7.65	4.44	0.58	2366	7.38	4.28	0.58	2516	7.20	4.18	0.58	2584	6.90	4.00	0.58	2693
30	24	8.04	3.70	0.46	2475	7.74	3.56	0.46	2611	7.56	3.48	0.46	2693	7.32	3.37	0.46	2829
30	26	8.28	2.82	0.34	2611	8.04	2.73	0.34	2747	7.92	2.69	0.34	2829	7.68	2.61	0.34	2910
31	18	7.05	6.06	0.86	2176	6.75	5.81	0.86	2285	6.48	5.57	0.86	2394	6.24	5.37	0.86	2502
31	20	7.35	5.44	0.74	2285	7.05	5.22	0.74	2421	6.84	5.06	0.74	2475	6.60	4.88	0.74	2584
31	22	7.65	4.74	0.62	2366	7.38	4.58	0.62	2516	7.20	4.46	0.62	2584	6.90	4.28	0.62	2693
31	24	8.04	4.02	0.50	2475	7.74	3.87	0.50	2611	7.56	3.78	0.50	2693	7.32	3.66	0.50	2829
31	26	8.28	3.15	0.38	2611	8.04	3.06	0.38	2747	7.92	3.01	0.38	2829	7.68	2.92	0.38	2910
32	18	7.05	6.35	0.90	2176	6.75	6.08	0.90	2285	6.48	5.83	0.90	2394	6.24	5.62	0.90	2502
32	20	7.35	5.73	0.78	2285	7.05	5.50	0.78	2421	6.84	5.34	0.78	2475	6.60	5.15	0.78	2584
32	22	7.65	5.05	0.66	2366	7.38	4.87	0.66	2516	7.20	4.75	0.66	2584	6.90	4.55	0.66	2693
32	24	8.04	4.34	0.54	2475	7.74	4.18	0.54	2611	7.56	4.08	0.54	2693	7.32	3.95	0.54	2829
32	26	8.28	3.48	0.42	2611	8.04	3.38	0.42	2747	7.92	3.33	0.42	2829	7.68	3.23	0.42	2910

## PERFORMANCE DATA

COOL operation(220V)

**MCFH-24NV -<sub>[E3]</sub> : MUCFH-24NV -<sub>[E3]</sub>**

CAPACITY :6.0(KW) SHF :0.64 INPUT :2720(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.88	2.70	0.46	2666	5.40	2.48	0.46	2829	5.19	2.39	0.46	2883	4.98	2.29	0.46	2938
21	20	6.18	2.10	0.34	2774	5.76	1.96	0.34	2910	5.55	1.89	0.34	2992	5.34	1.82	0.34	3074
22	18	5.88	2.94	0.50	2666	5.40	2.70	0.50	2829	5.19	2.60	0.50	2883	4.98	2.49	0.50	2938
22	20	6.18	2.35	0.38	2774	5.76	2.19	0.38	2910	5.55	2.11	0.38	2992	5.34	2.03	0.38	3074
22	22	6.54	1.70	0.26	2883	6.12	1.59	0.26	3046	5.91	1.54	0.26	3101	5.70	1.48	0.26	3155
23	18	5.88	3.18	0.54	2666	5.40	2.92	0.54	2829	5.19	2.80	0.54	2883	4.98	2.69	0.54	2938
23	20	6.18	2.60	0.42	2774	5.76	2.42	0.42	2910	5.55	2.33	0.42	2992	5.34	2.24	0.42	3074
23	22	6.54	1.96	0.30	2883	6.12	1.84	0.30	3046	5.91	1.77	0.30	3101	5.70	1.71	0.30	3155
24	18	5.88	3.41	0.58	2666	5.40	3.13	0.58	2829	5.19	3.01	0.58	2883	4.98	2.89	0.58	2938
24	20	6.18	2.84	0.46	2774	5.76	2.65	0.46	2910	5.55	2.55	0.46	2992	5.34	2.46	0.46	3074
24	22	6.54	2.22	0.34	2883	6.12	2.08	0.34	3046	5.91	2.01	0.34	3101	5.70	1.94	0.34	3155
24	24	6.90	1.52	0.22	2992	6.48	1.43	0.22	3128	6.30	1.39	0.22	3196	6.12	1.35	0.22	3264
25	18	5.88	3.65	0.62	2666	5.40	3.35	0.62	2829	5.19	3.22	0.62	2883	4.98	3.09	0.62	2938
25	20	6.18	3.09	0.50	2774	5.76	2.88	0.50	2910	5.55	2.78	0.50	2992	5.34	2.67	0.50	3074
25	22	6.54	2.49	0.38	2883	6.12	2.33	0.38	3046	5.91	2.25	0.38	3101	5.70	2.17	0.38	3155
25	24	6.90	1.79	0.26	2992	6.48	1.68	0.26	3128	6.30	1.64	0.26	3196	6.12	1.59	0.26	3264
26	18	5.88	3.88	0.66	2666	5.40	3.56	0.66	2829	5.19	3.43	0.66	2883	4.98	3.29	0.66	2938
26	20	6.18	3.34	0.54	2774	5.76	3.11	0.54	2910	5.55	3.00	0.54	2992	5.34	2.88	0.54	3074
26	22	6.54	2.75	0.42	2883	6.12	2.57	0.42	3046	5.91	2.48	0.42	3101	5.70	2.39	0.42	3155
26	24	6.90	2.07	0.30	2992	6.48	1.94	0.30	3128	6.30	1.89	0.30	3196	6.12	1.84	0.30	3264
26	26	7.26	1.31	0.18	3101	6.84	1.23	0.18	3237	6.63	1.19	0.18	3305	6.42	1.16	0.18	3373
27	18	5.88	4.12	0.70	2666	5.40	3.78	0.70	2829	5.19	3.63	0.70	2883	4.98	3.49	0.70	2938
27	20	6.18	3.58	0.58	2774	5.76	3.34	0.58	2910	5.55	3.22	0.58	2992	5.34	3.10	0.58	3074
27	22	6.54	3.01	0.46	2883	6.12	2.82	0.46	3046	5.91	2.72	0.46	3101	5.70	2.62	0.46	3155
27	24	6.90	2.35	0.34	2992	6.48	2.20	0.34	3128	6.30	2.14	0.34	3196	6.12	2.08	0.34	3264
27	26	7.26	1.60	0.22	3101	6.84	1.50	0.22	3237	6.63	1.46	0.22	3305	6.42	1.41	0.22	3373
28	18	5.88	4.35	0.74	2666	5.40	4.00	0.74	2829	5.19	3.84	0.74	2883	4.98	3.69	0.74	2938
28	20	6.18	3.83	0.62	2774	5.76	3.57	0.62	2910	5.55	3.44	0.62	2992	5.34	3.31	0.62	3074
28	22	6.54	3.27	0.50	2883	6.12	3.06	0.50	3046	5.91	2.96	0.50	3101	5.70	2.85	0.50	3155
28	24	6.90	2.62	0.38	2992	6.48	2.46	0.38	3128	6.30	2.39	0.38	3196	6.12	2.33	0.38	3264
28	26	7.26	1.89	0.26	3101	6.84	1.78	0.26	3237	6.63	1.72	0.26	3305	6.42	1.67	0.26	3373
29	18	5.88	4.59	0.78	2666	5.40	4.21	0.78	2829	5.19	4.05	0.78	2883	4.98	3.88	0.78	2938
29	20	6.18	4.08	0.66	2774	5.76	3.80	0.66	2910	5.55	3.66	0.66	2992	5.34	3.52	0.66	3074
29	22	6.54	3.53	0.54	2883	6.12	3.30	0.54	3046	5.91	3.19	0.54	3101	5.70	3.08	0.54	3155
29	24	6.90	2.90	0.42	2992	6.48	2.72	0.42	3128	6.30	2.65	0.42	3196	6.12	2.57	0.42	3264
29	26	7.26	2.18	0.30	3101	6.84	2.05	0.30	3237	6.63	1.99	0.30	3305	6.42	1.93	0.30	3373
30	18	5.88	4.82	0.82	2666	5.40	4.43	0.82	2829	5.19	4.26	0.82	2883	4.98	4.08	0.82	2938
30	20	6.18	4.33	0.70	2774	5.76	4.03	0.70	2910	5.55	3.89	0.70	2992	5.34	3.74	0.70	3074
30	22	6.54	3.79	0.58	2883	6.12	3.55	0.58	3046	5.91	3.43	0.58	3101	5.70	3.31	0.58	3155
30	24	6.90	3.17	0.46	2992	6.48	2.98	0.46	3128	6.30	2.90	0.46	3196	6.12	2.82	0.46	3264
30	26	7.26	2.47	0.34	3101	6.84	2.33	0.34	3237	6.63	2.25	0.34	3305	6.42	2.18	0.34	3373
31	18	5.88	5.06	0.86	2666	5.40	4.64	0.86	2829	5.19	4.46	0.86	2883	4.98	4.28	0.86	2938
31	20	6.18	4.57	0.74	2774	5.76	4.26	0.74	2910	5.55	4.11	0.74	2992	5.34	3.95	0.74	3074
31	22	6.54	4.05	0.62	2883	6.12	3.79	0.62	3046	5.91	3.66	0.62	3101	5.70	3.53	0.62	3155
31	24	6.90	3.45	0.50	2992	6.48	3.24	0.50	3128	6.30	3.15	0.50	3196	6.12	3.06	0.50	3264
31	26	7.26	2.76	0.38	3101	6.84	2.60	0.38	3237	6.63	2.52	0.38	3305	6.42	2.44	0.38	3373
32	18	5.88	5.29	0.90	2666	5.40	4.86	0.90	2829	5.19	4.67	0.90	2883	4.98	4.48	0.90	2938
32	20	6.18	4.82	0.78	2774	5.76	4.49	0.78	2910	5.55	4.33	0.78	2992	5.34	4.17	0.78	3074
32	22	6.54	4.32	0.66	2883	6.12	4.04	0.66	3046	5.91	3.90	0.66	3101	5.70	3.76	0.66	3155
32	24	6.90	3.73	0.54	2992	6.48	3.50	0.54	3128	6.30	3.40	0.54	3196	6.12	3.30	0.54	3264
32	26	7.26	3.05	0.42	3101	6.84	2.87	0.42	3237	6.63	2.78	0.42	3305	6.42	2.70	0.42	3373

## PERFORMANCE DATA

COOL operation(240V)

**MCFH-24NV -E3 : MUCFH-24NV -E3**

CAPACITY :6.0(KW) SHF :0.64 INPUT :2750(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	7.05	3.24	0.46	2200	6.75	3.11	0.46	2310	6.48	2.98	0.46	2420	6.24	2.87	0.46	2530
21	20	7.35	2.50	0.34	2310	7.05	2.40	0.34	2448	6.84	2.33	0.34	2503	6.60	2.24	0.34	2613
22	18	7.05	3.53	0.50	2200	6.75	3.38	0.50	2310	6.48	3.24	0.50	2420	6.24	3.12	0.50	2530
22	20	7.35	2.79	0.38	2310	7.05	2.68	0.38	2448	6.84	2.60	0.38	2503	6.60	2.51	0.38	2613
22	22	7.65	1.99	0.26	2393	7.38	1.92	0.26	2544	7.20	1.87	0.26	2613	6.90	1.79	0.26	2723
23	18	7.05	3.81	0.54	2200	6.75	3.65	0.54	2310	6.48	3.50	0.54	2420	6.24	3.37	0.54	2530
23	20	7.35	3.09	0.42	2310	7.05	2.96	0.42	2448	6.84	2.87	0.42	2503	6.60	2.77	0.42	2613
23	22	7.65	2.30	0.30	2393	7.38	2.21	0.30	2544	7.20	2.16	0.30	2613	6.90	2.07	0.30	2723
24	18	7.05	4.09	0.58	2200	6.75	3.92	0.58	2310	6.48	3.76	0.58	2420	6.24	3.62	0.58	2530
24	20	7.35	3.38	0.46	2310	7.05	3.24	0.46	2448	6.84	3.15	0.46	2503	6.60	3.04	0.46	2613
24	22	7.65	2.60	0.34	2393	7.38	2.51	0.34	2544	7.20	2.45	0.34	2613	6.90	2.35	0.34	2723
24	24	8.04	1.77	0.22	2503	7.74	1.70	0.22	2640	7.56	1.66	0.22	2723	7.32	1.61	0.22	2860
25	18	7.05	4.37	0.62	2200	6.75	4.19	0.62	2310	6.48	4.02	0.62	2420	6.24	3.87	0.62	2530
25	20	7.35	3.68	0.50	2310	7.05	3.53	0.50	2448	6.84	3.42	0.50	2503	6.60	3.30	0.50	2613
25	22	7.65	2.91	0.38	2393	7.38	2.80	0.38	2544	7.20	2.74	0.38	2613	6.90	2.62	0.38	2723
25	24	8.04	2.09	0.26	2503	7.74	2.01	0.26	2640	7.56	1.97	0.26	2723	7.32	1.90	0.26	2860
26	18	7.05	4.65	0.66	2200	6.75	4.46	0.66	2310	6.48	4.28	0.66	2420	6.24	4.12	0.66	2530
26	20	7.35	3.97	0.54	2310	7.05	3.81	0.54	2448	6.84	3.69	0.54	2503	6.60	3.56	0.54	2613
26	22	7.65	3.21	0.42	2393	7.38	3.10	0.42	2544	7.20	3.02	0.42	2613	6.90	2.90	0.42	2723
26	24	8.04	2.41	0.30	2503	7.74	2.32	0.30	2640	7.56	2.27	0.30	2723	7.32	2.20	0.30	2860
26	26	8.28	1.49	0.18	2640	8.04	1.45	0.18	2778	7.92	1.43	0.18	2860	7.68	1.38	0.18	2943
27	18	7.05	4.94	0.70	2200	6.75	4.73	0.70	2310	6.48	4.54	0.70	2420	6.24	4.37	0.70	2530
27	20	7.35	4.26	0.58	2310	7.05	4.09	0.58	2448	6.84	3.97	0.58	2503	6.60	3.83	0.58	2613
27	22	7.65	3.52	0.46	2393	7.38	3.39	0.46	2544	7.20	3.31	0.46	2613	6.90	3.17	0.46	2723
27	24	8.04	2.73	0.34	2503	7.74	2.63	0.34	2640	7.56	2.57	0.34	2723	7.32	2.49	0.34	2860
27	26	8.28	1.82	0.22	2640	8.04	1.77	0.22	2778	7.92	1.74	0.22	2860	7.68	1.69	0.22	2943
28	18	7.05	5.22	0.74	2200	6.75	5.00	0.74	2310	6.48	4.80	0.74	2420	6.24	4.62	0.74	2530
28	20	7.35	4.56	0.62	2310	7.05	4.37	0.62	2448	6.84	4.24	0.62	2503	6.60	4.09	0.62	2613
28	22	7.65	3.83	0.50	2393	7.38	3.69	0.50	2544	7.20	3.60	0.50	2613	6.90	3.45	0.50	2723
28	24	8.04	3.06	0.38	2503	7.74	2.94	0.38	2640	7.56	2.87	0.38	2723	7.32	2.78	0.38	2860
28	26	8.28	2.15	0.26	2640	8.04	2.09	0.26	2778	7.92	2.06	0.26	2860	7.68	2.00	0.26	2943
29	18	7.05	5.50	0.78	2200	6.75	5.27	0.78	2310	6.48	5.05	0.78	2420	6.24	4.87	0.78	2530
29	20	7.35	4.85	0.66	2310	7.05	4.65	0.66	2448	6.84	4.51	0.66	2503	6.60	4.36	0.66	2613
29	22	7.65	4.13	0.54	2393	7.38	3.99	0.54	2544	7.20	3.89	0.54	2613	6.90	3.73	0.54	2723
29	24	8.04	3.38	0.42	2503	7.74	3.25	0.42	2640	7.56	3.18	0.42	2723	7.32	3.07	0.42	2860
29	26	8.28	2.48	0.30	2640	8.04	2.41	0.30	2778	7.92	2.38	0.30	2860	7.68	2.30	0.30	2943
30	18	7.05	5.78	0.82	2200	6.75	5.54	0.82	2310	6.48	5.31	0.82	2420	6.24	5.12	0.82	2530
30	20	7.35	5.15	0.70	2310	7.05	4.94	0.70	2448	6.84	4.79	0.70	2503	6.60	4.62	0.70	2613
30	22	7.65	4.44	0.58	2393	7.38	4.28	0.58	2544	7.20	4.18	0.58	2613	6.90	4.00	0.58	2723
30	24	8.04	3.70	0.46	2503	7.74	3.56	0.46	2640	7.56	3.48	0.46	2723	7.32	3.37	0.46	2860
30	26	8.28	2.82	0.34	2640	8.04	2.73	0.34	2778	7.92	2.69	0.34	2860	7.68	2.61	0.34	2943
31	18	7.05	6.06	0.86	2200	6.75	5.81	0.86	2310	6.48	5.57	0.86	2420	6.24	5.37	0.86	2530
31	20	7.35	5.44	0.74	2310	7.05	5.22	0.74	2448	6.84	5.06	0.74	2503	6.60	4.88	0.74	2613
31	22	7.65	4.74	0.62	2393	7.38	4.58	0.62	2544	7.20	4.46	0.62	2613	6.90	4.28	0.62	2723
31	24	8.04	4.02	0.50	2503	7.74	3.87	0.50	2640	7.56	3.78	0.50	2723	7.32	3.66	0.50	2860
31	26	8.28	3.15	0.38	2640	8.04	3.06	0.38	2778	7.92	3.01	0.38	2860	7.68	2.92	0.38	2943
32	18	7.05	6.35	0.90	2200	6.75	6.08	0.90	2310	6.48	5.83	0.90	2420	6.24	5.62	0.90	2530
32	20	7.35	5.73	0.78	2310	7.05	5.50	0.78	2448	6.84	5.34	0.78	2503	6.60	5.15	0.78	2613
32	22	7.65	5.05	0.66	2393	7.38	4.87	0.66	2544	7.20	4.75	0.66	2613	6.90	4.55	0.66	2723
32	24	8.04	4.34	0.54	2503	7.74	4.18	0.54	2640	7.56	4.08	0.54	2723	7.32	3.95	0.54	2860
32	26	8.28	3.48	0.42	2640	8.04	3.38	0.42	2778	7.92	3.33	0.42	2860	7.68	3.23	0.42	2943

## PERFORMANCE DATA

COOL operation(240V)

**MCFH-24NV -<sub>[E3]</sub> : MUCFH-24NV -<sub>[E3]</sub>**

CAPACITY :6.0(KW) SHF :0.64 INPUT :2750(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C)															
		35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.88	2.70	0.46	2695	5.40	2.48	0.46	2860	5.19	2.39	0.46	2915	4.98	2.29	0.46	2970
21	20	6.18	2.10	0.34	2805	5.76	1.96	0.34	2943	5.55	1.89	0.34	3025	5.34	1.82	0.34	3108
22	18	5.88	2.94	0.50	2695	5.40	2.70	0.50	2860	5.19	2.60	0.50	2915	4.98	2.49	0.50	2970
22	20	6.18	2.35	0.38	2805	5.76	2.19	0.38	2943	5.55	2.11	0.38	3025	5.34	2.03	0.38	3108
22	22	6.54	1.70	0.26	2915	6.12	1.59	0.26	3080	5.91	1.54	0.26	3135	5.70	1.48	0.26	3190
23	18	5.88	3.18	0.54	2695	5.40	2.92	0.54	2860	5.19	2.80	0.54	2915	4.98	2.69	0.54	2970
23	20	6.18	2.60	0.42	2805	5.76	2.42	0.42	2943	5.55	2.33	0.42	3025	5.34	2.24	0.42	3108
23	22	6.54	1.96	0.30	2915	6.12	1.84	0.30	3080	5.91	1.77	0.30	3135	5.70	1.71	0.30	3190
24	18	5.88	3.41	0.58	2695	5.40	3.13	0.58	2860	5.19	3.01	0.58	2915	4.98	2.89	0.58	2970
24	20	6.18	2.84	0.46	2805	5.76	2.65	0.46	2943	5.55	2.55	0.46	3025	5.34	2.46	0.46	3108
24	22	6.54	2.22	0.34	2915	6.12	2.08	0.34	3080	5.91	2.01	0.34	3135	5.70	1.94	0.34	3190
24	24	6.90	1.52	0.22	3025	6.48	1.43	0.22	3163	6.30	1.39	0.22	3231	6.12	1.35	0.22	3300
25	18	5.88	3.65	0.62	2695	5.40	3.35	0.62	2860	5.19	3.22	0.62	2915	4.98	3.09	0.62	2970
25	20	6.18	3.09	0.50	2805	5.76	2.88	0.50	2943	5.55	2.78	0.50	3025	5.34	2.67	0.50	3108
25	22	6.54	2.49	0.38	2915	6.12	2.33	0.38	3080	5.91	2.25	0.38	3135	5.70	2.17	0.38	3190
25	24	6.90	1.79	0.26	3025	6.48	1.68	0.26	3163	6.30	1.64	0.26	3231	6.12	1.59	0.26	3300
26	18	5.88	3.88	0.66	2695	5.40	3.56	0.66	2860	5.19	3.43	0.66	2915	4.98	3.29	0.66	2970
26	20	6.18	3.34	0.54	2805	5.76	3.11	0.54	2943	5.55	3.00	0.54	3025	5.34	2.88	0.54	3108
26	22	6.54	2.75	0.42	2915	6.12	2.57	0.42	3080	5.91	2.48	0.42	3135	5.70	2.39	0.42	3190
26	24	6.90	2.07	0.30	3025	6.48	1.94	0.30	3163	6.30	1.89	0.30	3231	6.12	1.84	0.30	3300
26	26	7.26	1.31	0.18	3135	6.84	1.23	0.18	3273	6.63	1.19	0.18	3341	6.42	1.16	0.18	3410
27	18	5.88	4.12	0.70	2695	5.40	3.78	0.70	2860	5.19	3.63	0.70	2915	4.98	3.49	0.70	2970
27	20	6.18	3.58	0.58	2805	5.76	3.34	0.58	2943	5.55	3.22	0.58	3025	5.34	3.10	0.58	3108
27	22	6.54	3.01	0.46	2915	6.12	2.82	0.46	3080	5.91	2.72	0.46	3135	5.70	2.62	0.46	3190
27	24	6.90	2.35	0.34	3025	6.48	2.20	0.34	3163	6.30	2.14	0.34	3231	6.12	2.08	0.34	3300
27	26	7.26	1.60	0.22	3135	6.84	1.50	0.22	3273	6.63	1.46	0.22	3341	6.42	1.41	0.22	3410
28	18	5.88	4.35	0.74	2695	5.40	4.00	0.74	2860	5.19	3.84	0.74	2915	4.98	3.69	0.74	2970
28	20	6.18	3.83	0.62	2805	5.76	3.57	0.62	2943	5.55	3.44	0.62	3025	5.34	3.31	0.62	3108
28	22	6.54	3.27	0.50	2915	6.12	3.06	0.50	3080	5.91	2.96	0.50	3135	5.70	2.85	0.50	3190
28	24	6.90	2.62	0.38	3025	6.48	2.46	0.38	3163	6.30	2.39	0.38	3231	6.12	2.33	0.38	3300
28	26	7.26	1.89	0.26	3135	6.84	1.78	0.26	3273	6.63	1.72	0.26	3341	6.42	1.67	0.26	3410
29	18	5.88	4.59	0.78	2695	5.40	4.21	0.78	2860	5.19	4.05	0.78	2915	4.98	3.88	0.78	2970
29	20	6.18	4.08	0.66	2805	5.76	3.80	0.66	2943	5.55	3.66	0.66	3025	5.34	3.52	0.66	3108
29	22	6.54	3.53	0.54	2915	6.12	3.30	0.54	3080	5.91	3.19	0.54	3135	5.70	3.08	0.54	3190
29	24	6.90	2.90	0.42	3025	6.48	2.72	0.42	3163	6.30	2.65	0.42	3231	6.12	2.57	0.42	3300
29	26	7.26	2.18	0.30	3135	6.84	2.05	0.30	3273	6.63	1.99	0.30	3341	6.42	1.93	0.30	3410
30	18	5.88	4.82	0.82	2695	5.40	4.43	0.82	2860	5.19	4.26	0.82	2915	4.98	4.08	0.82	2970
30	20	6.18	4.33	0.70	2805	5.76	4.03	0.70	2943	5.55	3.89	0.70	3025	5.34	3.74	0.70	3108
30	22	6.54	3.79	0.58	2915	6.12	3.55	0.58	3080	5.91	3.43	0.58	3135	5.70	3.31	0.58	3190
30	24	6.90	3.17	0.46	3025	6.48	2.98	0.46	3163	6.30	2.90	0.46	3231	6.12	2.82	0.46	3300
30	26	7.26	2.47	0.34	3135	6.84	2.33	0.34	3273	6.63	2.25	0.34	3341	6.42	2.18	0.34	3410
31	18	5.88	5.06	0.86	2695	5.40	4.64	0.86	2860	5.19	4.46	0.86	2915	4.98	4.28	0.86	2970
31	20	6.18	4.57	0.74	2805	5.76	4.26	0.74	2943	5.55	4.11	0.74	3025	5.34	3.95	0.74	3108
31	22	6.54	4.05	0.62	2915	6.12	3.79	0.62	3080	5.91	3.66	0.62	3135	5.70	3.53	0.62	3190
31	24	6.90	3.45	0.50	3025	6.48	3.24	0.50	3163	6.30	3.15	0.50	3231	6.12	3.06	0.50	3300
31	26	7.26	2.76	0.38	3135	6.84	2.60	0.38	3273	6.63	2.52	0.38	3341	6.42	2.44	0.38	3410
32	18	5.88	5.29	0.90	2695	5.40	4.86	0.90	2860	5.19	4.67	0.90	2915	4.98	4.48	0.90	2970
32	20	6.18	4.82	0.78	2805	5.76	4.49	0.78	2943	5.55	4.33	0.78	3025	5.34	4.17	0.78	3108
32	22	6.54	4.32	0.66	2915	6.12	4.04	0.66	3080	5.91	3.90	0.66	3135	5.70	3.76	0.66	3190
32	24	6.90	3.73	0.54	3025	6.48	3.50	0.54	3163	6.30	3.40	0.54	3231	6.12	3.30	0.54	3300
32	26	7.26	3.05	0.42	3135	6.84	2.87	0.42	3273	6.63	2.78	0.42	3341	6.42	2.70	0.42	3410

## PERFORMANCE DATA

HEAT operation(220V)

**MCFH-13NV -E4 : MUCFH-13NV -E4**

CAPACITY :4.0(KW) INPUT :1130(W)

INDOOR DB(°C)	OUTDOOR WB(°C)													
	-10		-5		0		5		10		15			
Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	
15	2.52	735	3.04	881	3.56	994	4.08	1074	4.60	1141	5.08	1175	5.60	1198
21	2.40	791	2.88	938	3.40	1040	3.88	1119	4.40	1175	4.88	1209	5.38	1254
26	2.16	848	2.68	994	3.16	1096	3.68	1175	4.20	1232	4.68	1266	5.20	1300

HEAT operation(240V)

**MCFH-13NV -E4 : MUCFH-13NV -E4**

CAPACITY :4.0(KW) INPUT :1220(W)

INDOOR DB(°C)	OUTDOOR WB(°C)													
	-10		-5		0		5		10		15			
Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	
15	2.52	793	3.04	952	3.56	1074	4.08	1159	4.60	1232	5.08	1269	5.60	1293
21	2.40	854	2.88	1013	3.40	1122	3.88	1208	4.40	1269	4.88	1305	5.38	1354
26	2.16	915	2.68	1074	3.16	1183	3.68	1269	4.20	1330	4.68	1366	5.20	1403

HEAT operation(220V)

**MCFH-18NV -E3 : MUCFH-18NV -E3**

CAPACITY :5.4(KW) INPUT :1910(W)

INDOOR DB(°C)	OUTDOOR WB(°C)													
	-10		-5		0		5		10		15			
Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	
15	3.40	1242	4.10	1490	4.81	1681	5.51	1815	6.21	1929	6.86	1986	7.56	2025
21	3.24	1337	3.89	1585	4.59	1757	5.24	1891	5.94	1986	6.59	2044	7.26	2120
26	2.92	1433	3.62	1681	4.27	1853	4.97	1986	5.67	2082	6.32	2139	7.02	2197

HEAT operation(240V)

**MCFH-18NV -E3 : MUCFH-18NV -E3**

CAPACITY :5.4(KW) INPUT :2010(W)

INDOOR DB(°C)	OUTDOOR WB(°C)													
	-10		-5		0		5		10		15			
Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	
15	3.40	1307	4.10	1568	4.81	1769	5.51	1910	6.21	2030	6.86	2090	7.56	2131
21	3.24	1407	3.89	1668	4.59	1849	5.24	1990	5.94	2090	6.59	2151	7.26	2231
26	2.92	1508	3.62	1769	4.27	1950	4.97	2090	5.67	2191	6.32	2251	7.02	2312

HEAT operation(220V)

**MCFH-24NV -E3 : MUCFH-24NV -E3**

CAPACITY :6.2(KW) INPUT :2540(W)

INDOOR DB(°C)	OUTDOOR WB(°C)													
	-10		-5		0		5		10		15			
Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	
15	3.91	1651	4.71	1981	5.52	2235	6.32	2413	7.13	2565	7.87	2642	8.68	2692
21	3.72	1778	4.46	2108	5.27	2337	6.01	2515	6.82	2642	7.56	2718	8.34	2819
26	3.35	1905	4.15	2235	4.90	2464	5.70	2642	6.51	2769	7.25	2845	8.06	2921

HEAT operation(240V)

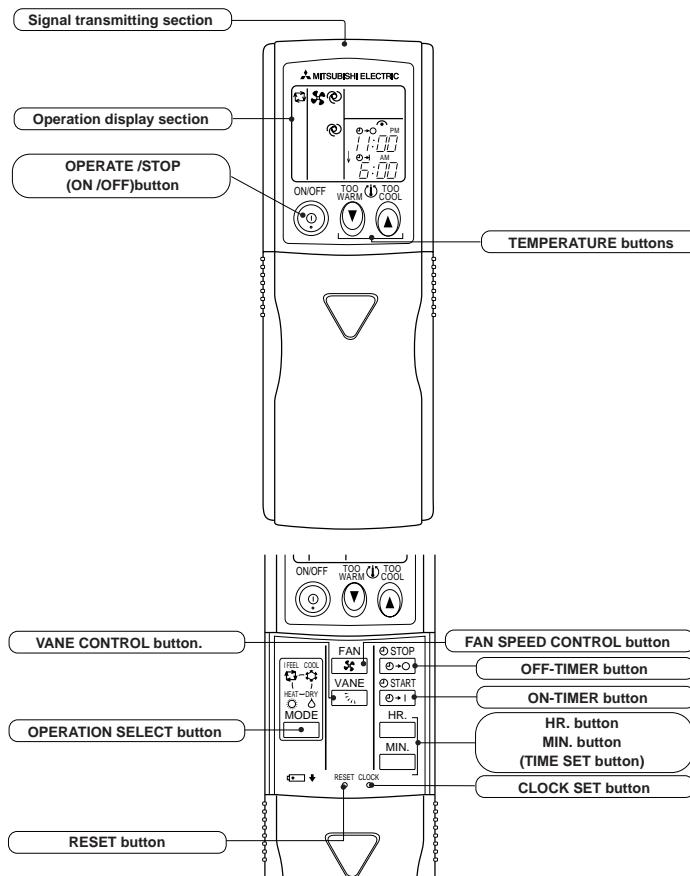
**MCFH-24NV -E3 : MUCFH-24NV -E3**

CAPACITY :6.2(KW) INPUT :2650(W)

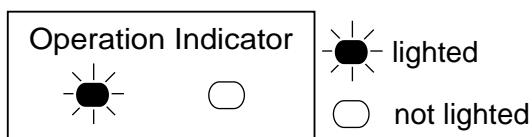
INDOOR DB(°C)	OUTDOOR WB(°C)													
	-10		-5		0		5		10		15			
Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	
15	3.91	1723	4.71	2067	5.52	2332	6.32	2518	7.13	2677	7.87	2756	8.68	2809
21	3.72	1855	4.46	2200	5.27	2438	6.01	2624	6.82	2756	7.56	2836	8.34	2942
26	3.35	1988	4.15	2332	4.90	2571	5.70	2756	6.51	2889	7.25	2968	8.06	3048

MCFH-13NV - E4 MCFH-18NV - E3 MUCFH-13NV - E4 MUCFH-24NV - E3

MCFH-24NV - E3 MUCFH-18NV - E3

**WIRELESS REMOTE CONTROLLER****INDOOR UNIT DISPLAY SECTION****OPERATION INDICATOR lamp**

The operation indicator at the right side of the indoor unit indicates the operation state.



Indication	Operation state	Difference between set temperature and room temperature
	This shows that the air conditioner is operating to reach the target temperature. Please wait until the target temperature is obtained.	Approx. 2 °C or more
	This shows that the room temperature is approaching the target temperature.	Approx. 2 °C or less

Once the operation mode are set, the same operation mode can be repeated by simply turning the OPERATE/STOP(ON/OFF) button ON.

Indoor unit receives the signal with a beep tone.

When the system turns off, 3-minute time delay will operate to protect system from overload and compressor will not restart for 3 minutes.

**9-1. "I FEEL CONTROL" (□) OPERATION**

- (1) Press OPERATE/STOP(ON/OFF) button on the remote controller. OPERATION INDICATOR lamp of the indoor unit turns on with a beep tone.
- (2) Select "I FEEL CONTROL" (□) mode with the OPERATION SELECT button.
- (3) The operation mode is determined by the room temperature at start-up of the operation.

Initial room temperature	Mode
25°C or more	COOL mode of "I FEEL CONTROL"
23°C to 25°C	DRY mode of "I FEEL CONTROL"
less than 23°C	HEAT mode of "I FEEL CONTROL"

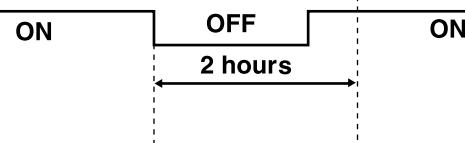
- Once the mode is fixed, the mode does not change by room temperature afterwards.
- Under the ON-TIMER (○→|) operation, mode is determined according to the room temperature at set time the operation starts.
- When the system is stopped with the OPERATE/ STOP(ON/OFF) button on the remote controller, and restarted within 2 hours in "I FEEL CONTROL" (□) mode, the system operates in previous mode automatically regardless of the room temperature.

**Example****Previous operation**

COOL mode of "I FEEL CONTROL" or COOL mode

**Restart**

COOL mode of "I FEEL CONTROL"



When the system is restarted after 2 hours and more, the operation mode is determined by the room temperature at start-up of the operation.

**Example****Previous operation**

COOL mode of "I FEEL CONTROL" or COOL mode

**Restart**

COOL or DRY or HEAT mode of "I FEEL CONTROL" that is determined by room temperature at start-up of the operation.



(4) The initial set temperature is decided by the initial room temperature.

Model	Initial room temperature	Initial set temperature	
COOL mode of "I FEEL CONTROL"	26°C or more	24°C	※1
	25°C to 26°C	Initial room temperature minus 2°C	
DRY mode of "I FEEL CONTROL"	23°C to 25°C	Initial room temperature minus 2°C	
HEAT mode of "I FEEL CONTROL"	less than 23°C	26°C	

※1 When the system is restarted with the remote controller, the system operates with the previous set temperature regardless of room temperature at restart.

The set temperature is calculated by the previous set temperature.

## (5) TEMPERATURE buttons

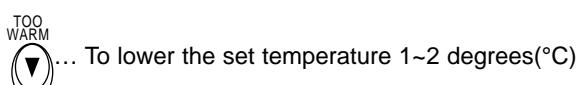
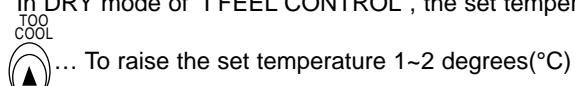
In "I FEEL CONTROL" mode, set temperature is decided by the microprocessor based on the room temperature.

In addition, set temperature can be controlled by or TOO WARM or TOO COOL buttons when you feel too warm or too cool. Each time the TOO WARM or TOO COOL button is pressed, the indoor unit receives the signal and emits a beep tone.

### ● Fuzzy control

When the TOO COOL or TOO WARM button is pressed, the microprocessor changes the set temperature, considering the room temperature, the frequency of pressing TOO COOL or TOO WARM button, and the user's preference to heat or cool. So this is called "Fuzzy control", and works only in "I FEEL CONTROL" mode.

In DRY mode of "I FEEL CONTROL", the set temperature doesn't change.



## — COOL mode of "I FEEL CONTROL" —

### 1. Indoor fan speed control

Indoor fan operates at the set speed by FAN SPEED CONTROL button.

In AUTO the fan speed is as follows.

Initial temperature difference	Fan Speed	Difference between room temperature and set temperature during operation
Room temperature minus set temperature : 2 degrees or more.....	High	
Room temperature minus set temperature : Between 1 and 2 degrees.....	Med.	
Room temperature minus set temperature : less than 1 degree.....	Low	1deg. 1.7deg. 2deg. 4deg.

### 2. Coil frost prevention

#### ① Temperature control

When the indoor coil thermistor RT12 reads -1°C or below, the coil frost prevention mode starts immediately.

However, the coil frost prevention doesn't work for 5 minutes since the compressor has started.

The indoor fan operates at the set speed and the compressor stops for 5 minutes.

After that, if RT12 still reads below -1°C, this mode prolonged until the RT12 reads over -1°C.

#### ② Time control

When the three conditions as follows have been satisfied for 1 hour and 45 minutes, compressor stops for 3 minutes.

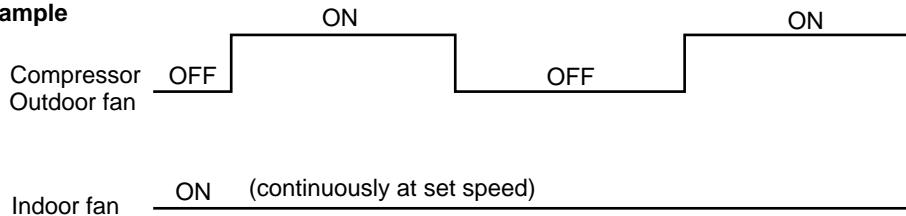
- a. Compressor has been continuously operating.
- b. Indoor fan speed is Low or Med..
- c. Room temperature is below 26°C.

When compressor stops, the accumulated time is cancelled and when compressor restarts, time counting starts from the beginning.

Time counting also stops temporarily when the indoor fan speed becomes High or the room temperature exceeds 26°C. However, when two of the above conditions (b. and c.) are satisfied again, Time accumulation is resumed.

## Operation chart

### Example



### —DRY mode of "I FEEL CONTROL"—

The system for dry operation uses the same refrigerant circuit as the cooling circuit.

The compressor and the indoor fan are controlled by the room temperature.

By such controls, indoor air flow amounts will be reduced in order to lower humidity without much room temperature decrease.

### 1. Indoor fan speed control

Indoor fan operates at the set speed by FAN SPEED CONTROL button.

However, in AUTO fan operation, fan speed becomes Low.

### 2. The operation of the compressor and indoor/ outdoor fan

Compressor operates by temperature control and time control.

Set temperature is controlled to fall 2°C from initial room temperature.

Indoor fan and outdoor fan operate in the same cycle as the compressor.

- When the room temperature is 23°C or over:

When the thermostat is ON, the compressor repeats 8 minutes ON and 3 minutes OFF.

When the thermostat is OFF, the compressor repeats 4 minutes OFF and 1 minute ON.

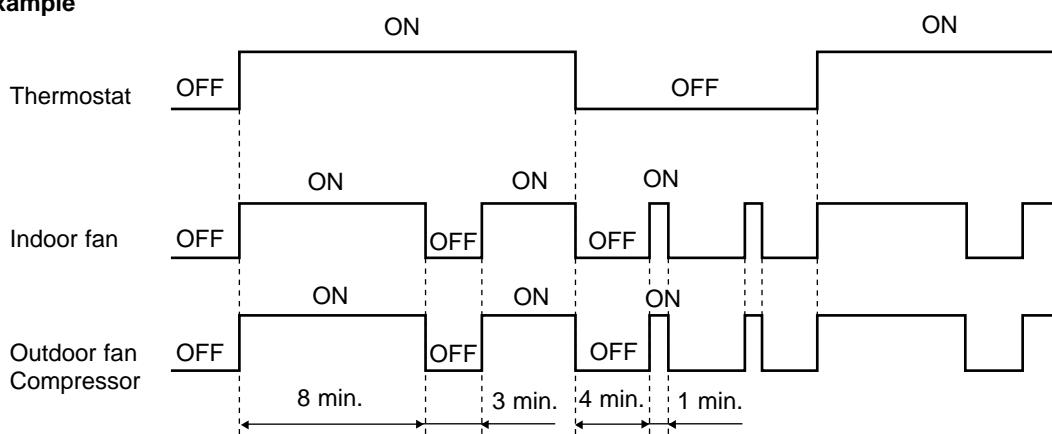
- When the room temperature is under 23°C.

When the thermostat is ON, the compressor repeats 2 minutes ON and 3 minutes OFF.

When the thermostat is OFF, the compressor repeats 4 minutes OFF and 1 minute ON.

## Operation time chart

### Example



### 3. Coil frost prevention

- The operation is as same as coil frost prevention during COOL mode of "I FEEL CONTROL".

- Indoor fan operates at the set speed and the compressor stops for 5 minutes, because protection (Coil frost prevention) has the priority.

However, when coil frost prevention works while the compressor is not operating, it's speed becomes Low.

## — HEAT mode of “I FEEL CONTROL” —

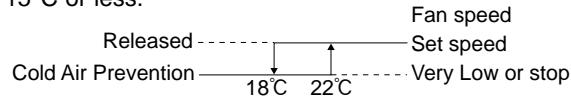
### 1. Indoor fan speed control

(1) In AUTO the fan speed is as follows.

Initial temperature difference	Fan speed	Difference between room temperature and set temperature during operation
Set temperature minus room temperature: 2 degrees or more	High	
Set temperature minus room temperature: Between 1 and 2 degrees	Med.	
Set temperature minus room temperature: less than 1 degree	Low	2deg. 4deg. 1deg. 1.7deg.

(2) Cold air prevention control

The fan runs at set speed when the indoor coil thermistor RT12 temperature exceeds 22°C. The fan operates at Very Low when the temperature of indoor coil thermistor RT12 is below 18°C. But the fan stops when the indoor fan operates at Very Low and the room temperature is 15°C or less.



**NOTE :** If the temperature of RT12 reads from 18°C to 22°C at the air conditioner starting and also after defrosting, this control works.

(3) Warm air control

When compressor starts in heating operation or after defrosting, the fan changes the speed due to the indoor coil thermistor RT12 temperature to blow out warm air.

After releasing of cold air prevention, when the indoor coil temperature is 37°C or above, the fan speed shifts to the set speed, and when the fan speed is changed by the remote controller, the fan speed is the set speed.

When the indoor coil temperature is less than 37°C, the fan speed is controlled by time as below.

<Time condition> <Indoor fan speed>

less than 2 minutes ..... Low

2 minutes to 4 minutes ..... Med.

4 minutes or more ..... High

The upper limit of the fan speed is the set speed.

If the thermostat turns off, this operation changes to flow soft control.

(4) Flow soft control

After the thermostat turns off, the indoor fan operates at Very Low.

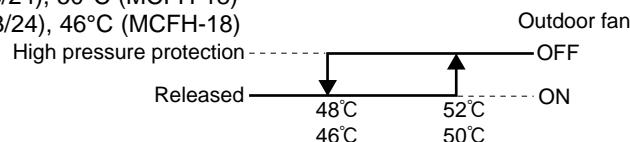
**NOTE :** When the thermostat turns on, the fan operates at the set speed. Due to the cold air prevention control, the fan does not start at set speed until the indoor coil thermistor RT12 reads 22°C or more.

### 2. High pressure protection

During heating operation, the outdoor fan motor is controlled by the temperature of indoor coil thermistor RT12 temperature for excess rise protection of compressor discharge pressure.

Outdoor fan OFF : 52°C (MCFH-13/24), 50°C (MCFH-18)

Outdoor fan ON : 48°C (MCFH-13/24), 46°C (MCFH-18)

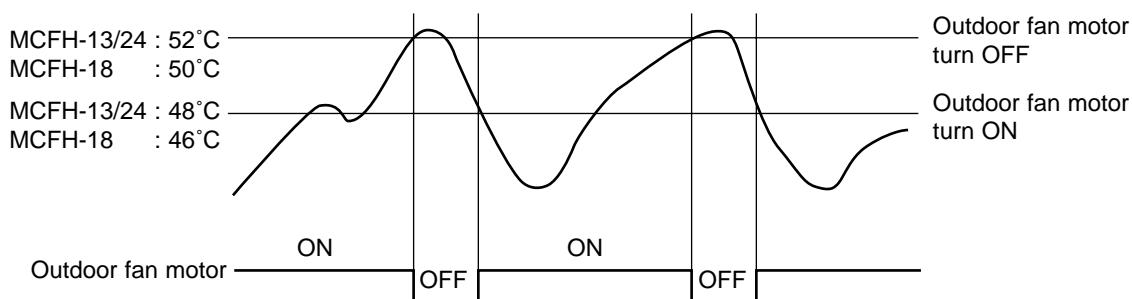


#### High pressure protection chart

##### Example

Indoor coil thermistor

RT12 temperature



**NOTE :** When the outdoor fan is OFF in heating, defrosting of outdoor heat exchanger is not detected by the defrost thermistor RT61.

### 3. Defrosting

Defrosting of outdoor heat exchanger is controlled by DEICER P.C. board, with detection by the defrost thermistor RT61.

#### (1) Starting conditions of defrost

When all conditions of a) ~ c) are satisfied, the defrosting operation starts.

a) The compressor cumulative operation time exceeds 40 minutes without the defrosting operation working.

b) The defrost thermistor RT61 reads -3°C or less.

c) After releasing the high pressure protection 4 minutes and 15 seconds have elapsed.

#### (2) Releasing conditions of defrost

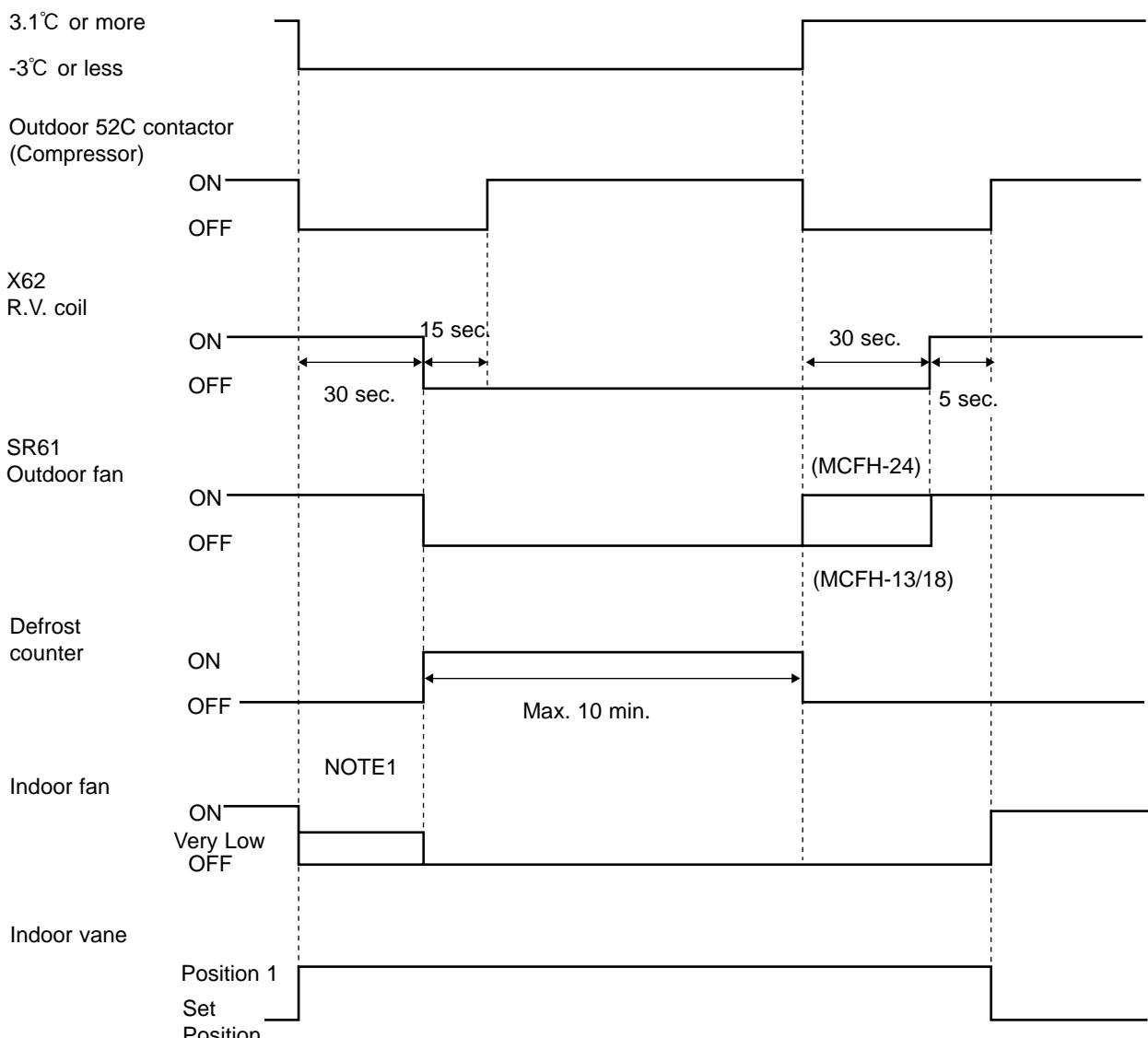
When the condition d) or e) is satisfied, the defrosting operation stops.

d) The defrost thermistor RT61 reads 3.1°C or more.

e) The defrosting time exceeds 10 minutes.

#### (3) Defrosting time chart

Defrost thermistor RT61



**NOTE:** When the indoor coil thermistor reads above 18°C, indoor fan operates at Very Low for 30 seconds.

When the indoor coil thermistor reads 18°C or less, the indoor fan stops.

#### 4. 4-way valve control

- Heating ..... ON
- Cooling ..... OFF
- Dry ..... OFF

NOTE : The 4-way valve reverses for 5 seconds right before start-up of the compressor.

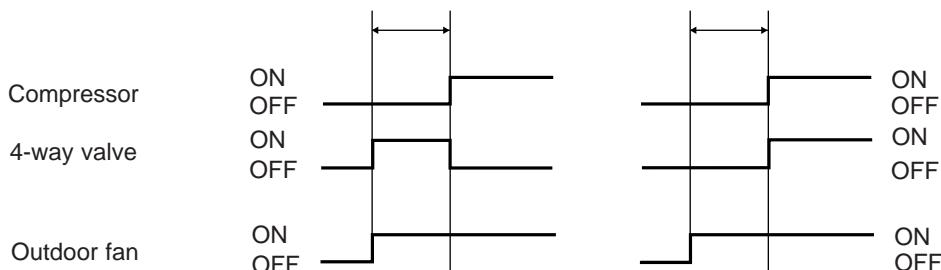
Ex. In case of power ON  
with remote controller

(COOL / DRY)

(HEAT)

5 sec.

5 sec.

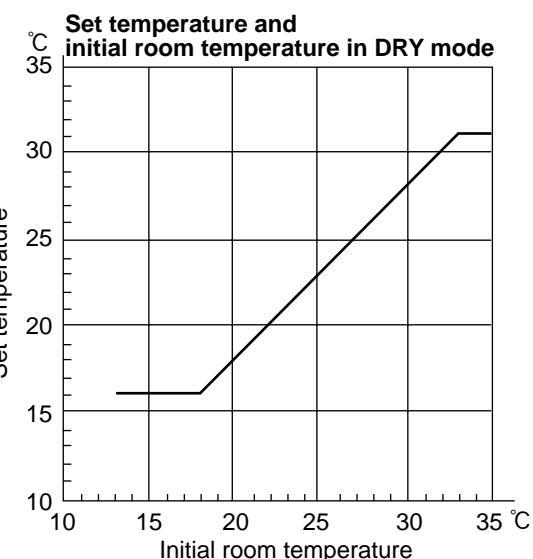


#### 9-2. COOL ( ) OPERATION

- (1) Press OPERATE/STOP(ON/OFF) button.  
OPERATION INDICATOR lamp of the indoor unit turns on with a beep tone.
- (2) Select COOL mode with the OPERATION SELECT button.
- (3) Press the TEMPERATURE buttons  
(TOO WARM or TOO COOL button)  
to select the desired temperature.  
The setting range is 16 ~ 31°C  
※ Indoor fan continues to operate regardless of thermostat's OFF-  
ON at set speed.  
※ Coil frost prevention is as same as COOL mode of "I FEEL  
CONTROL".

#### 9-3. DRY ( ) OPERATION

- (1) Press OPERATE/STOP(ON/OFF) button.  
OPERATION INDICATOR lamp of the indoor unit turns on with a  
beep tone.
- (2) Select DRY mode with the OPERATION SELECT button.
- (3) The microprocessor reads the room temperature and determines  
the set temperature. Set temperature is as shown on the right  
chart.  
Thermostat (SET TEMP.) does not work.  
The other operations are as same as DRY mode of "I FEEL CON-  
TROL".
- (4) DRY operation will not function when the room temperature is  
13°C or below.



#### 9-4. HEAT ( ) OPERATION

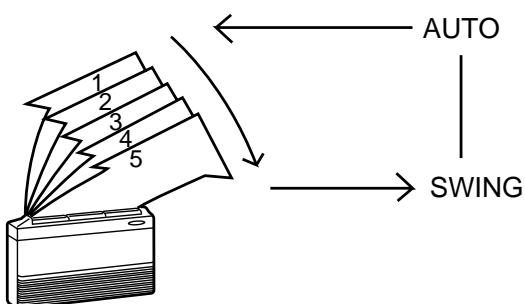
- (1) Press OPERATE/STOP(ON/OFF) button.  
OPERATION INDICATOR lamp of the indoor unit turns on with a beep tone.
- (2) Select HEAT mode with the OPERATION SELECT button.
- (3) Press TEMPERATURE buttons (TOO WARM or TOO COOL button) to select the desired temperature.  
The setting range is 16 ~ 31°C.
- (4) Indoor fan speed control, high pressure protection, defrosting, reversing valve control are the same as HEAT mode of "I  
FEEL CONTROL".

## 9-5. AUTO VANE OPERATION

### (1) Vane motor drive

This model is equipped with a stepping motor for the vane. The rotating direction, speed, and angle of the motor are controlled by pulse signals (approx. 12V) transmitted from indoor microprocessor.

- (2) Each time the VANE CONTROL button is pressed, angle of horizontal vane is changed in sequence, from 1, 2, 3, 4, 5 SWING to AUTO.



### (3) Positioning

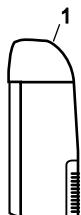
The vane is once pressed to the vane stopper below to confirm the standard position and then set to the desired angle. Confirming of standard position is performed in case of follows.

- (a) When the OPERATE/STOP(ON/OFF) button is pressed.
- (b) When the vane control is changed from AUTO to MANUAL.
- (c) When the SWING is finished.
- (d) When the test run starts.
- (e) When the power supply turns ON.

### (4) VANE AUTO mode

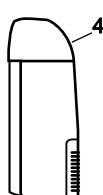
In VANE AUTO mode, the microprocessor automatically determines the vane angle and operation to make the optimum room-temperature distribution.

#### 1. In COOL and DRY operation

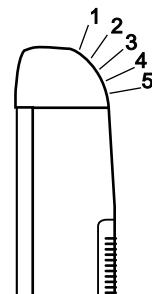


Vane angle is fixed to position 1.

#### 2. In HEAT operation



Vane angle is fixed to position 4.



### (5) STOP (operation OFF) and ON-TIMER standby.

When the following cases occur, the vane returns to the closed position.

- (a) When the OPERATE/STOP (ON/OFF) button is pressed (POWER OFF).
- (b) When the operation is stopped by the emergency operation.
- (c) When the ON-TIMER is on standby.

### (6) Dew prevention

During COOL or DRY operation at position 4 or 5 when the compressor cumulative operation time exceeds 1 hour, the angle of horizontal vane automatically changes to Position 1 for dew prevention.

### (7) SWING (.swing) MODE

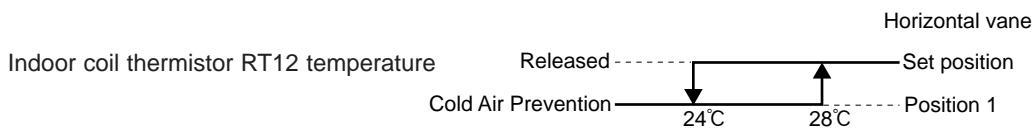
By selecting SWING mode with the VANE CONTROL button, the horizontal vane swings vertically between Position 1 and 5 in COOL and DRY operation, between Position 2 and 4 in HEAT operation.

The remote controller displays "swing". If the VANE CONTROL (swing) button is pressed during SWING mode or the operation stops or changes to other mode, SWING mode is released.

(8) Cold air prevention in HEAT operation.

When any of the following conditions occurs in HEAT operation, the angle of horizontal vane automatically changes to Position 1 to prevent cold air blowing on users.

- ① Compressor is not operating.
- ② Defrosting is performed.
- ③ Indoor coil thermistor RT12 reads 24°C or below.
- ④ Indoor coil thermistor RT12 temperature is raising from 24°C or below, but it does not exceed 28°C.



**NOTE :** If the temperature of RT12 reads from 24°C to 28°C at the air conditioner starting, this control works.

## 9-6. TIMER OPERATION

### 1. How to set the timer

- (1) Press OPERATE/STOP(ON/OFF) button to start the air conditioner.
- (2) Check that the current time is set correctly.

**NOTE :** Timer operation will not work without setting the current time. Initially "AM0:00" blinks at the current time display of TIME MONITOR, so set the current time correctly with CLOCK SET button.

- (3) Press ON-TIMER, OFF-TIMER button to select the operation.

- “ $\oplus \rightarrow |$ ” button ... AUTO START operation (ON timer)
- “ $\oplus \rightarrow \circ$ ” button ... AUTO STOP operation (OFF timer)

- (4) Press HR. and MIN. button to set the timer. Time setting is 10-minute units.

HR. and MIN. button will work when “ $\oplus \rightarrow |$ ” or “ $\oplus \rightarrow \circ$ ” button is flashing.

These marks disappear in 1 minute.

After setting the ON timer, check that OPERATION INDICATOR lamp of the indoor unit lights.

**NOTE1 :** Be sure to place the remote controller at the position where its signal can reach the air conditioner even during TIMER operation, or the set time may deviate within the range of about 10 minutes.

**NOTE2 :** Reset the timer in the following cases, or the set time may deviate and other malfunctions may occur.

- A power failure occurs.
- The circuit breaker functions.

### 2. Cancel

TIMER setting can be cancelled with the TIMER CONTROL buttons. (“ $\oplus \rightarrow |$ ” or “ $\oplus \rightarrow \circ$ ”)

To cancel the ON timer, press the “ $\oplus \rightarrow |$ ” button.

To cancel the OFF timer, press the “ $\oplus \rightarrow \circ$ ” button.

TIMER is cancelled and the display of set time disappears.

## PROGRAM TIMER

- The OFF timer and ON timer can be used in combination.

- ” $\downarrow$ ” and ” $\uparrow$ ” display show the order of the OFF timer and ON timer operation.

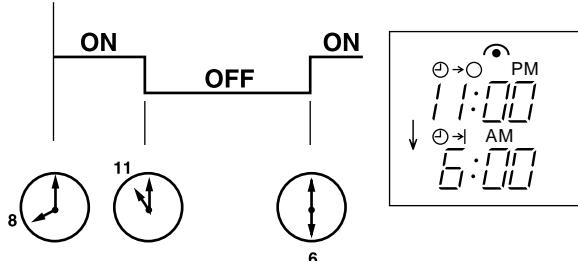
(Example 1) The current timer is 8:00 PM.

The unit turns off at 11:00 PM, and on at 6:00 AM.

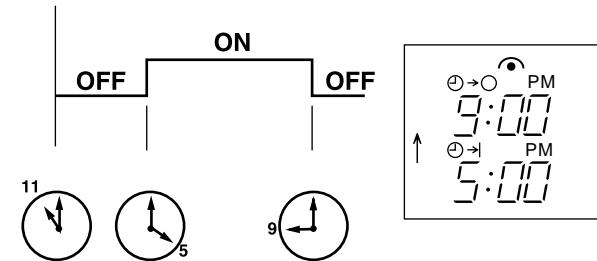
(Example 2) The current time is 11:00 AM.

The unit turns on at 5:00 PM, and off at 9:00 PM.

### Current



### Current



## 9-7. EMERGENCY-TEST OPERATION

In case of test run operation or emergency operation, use the EMERGENCY OPERATION switch on the front of the indoor unit. Emergency operation is available when the remote controller is missing, has failed or the batteries of remote controller run down. The unit will start and the OPERATION INDICATOR lamp will light.

The first 30 minutes of operation is the test run operation. This operation is for servicing. The indoor fan speed runs at High speed and the system is in continuous operation. (The thermostat is ON.)

After 30 minutes of test run operation the system shifts to EMERGENCY COOL / HEAT MODE with a set temperature of 24°C.

The fan speed shifts to Med. speed.

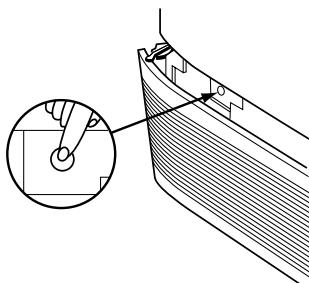
The coil frost prevention works even in emergency operation, and defrosting too.

In the test run or emergency operation, the horizontal vane operates in VANE AUTO ( @ ) mode.

Emergency operation continues until the EMERGENCY OPERATION switch is pressed once or twice or the unit receives any signal from the remote controller. In case of latter normal operation will start.

**NOTE :** Do not press the EMERGENCY OPERATION switch during normal operation.

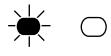
### EMERGENCY OPERATION switch



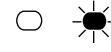
OPERATION INDICATOR lamp



Press once <Cool>



Press again <Heat>



Press once again <Stop>



## 9-8. AUTO RESTART FUNCTION

When the indoor unit is controlled with the remote controller, the operation mode, set temperature, and the fan speed are memorized by the auto restart P.C. board.

The "AUTO RESTART FUNCTION" sets to work the moment the power has restored after power failure. Then, the unit will restart automatically. However if the unit is operated in "I FEEL CONTROL" mode before power failure, the operation is not memorized. In "I FEEL CONTROL mode", the operation is decided by the initial room temperature.

### NOTE :

- The operation settings are memorized when 10 seconds have passed after the remote controller was operated.
- If the main power is turned off or a power failure occurs while AUTO START/ STOP timer is active, the timer setting is cancelled.
- If the unit has been off with the remote controller before power failure, the auto restart function does not work as the power button of the remote controller is off.
- To prevent breaker off due to the rush of starting current, systematize other home appliances not to turn on at the same time.
- When some air conditioners are connected to the same supply system, if they are operated before power failure, the starting current of all the compressors may flow simultaneously at restart.  
Therefore, the special counter-measures are required to prevent the main voltage-drop or the rush of the starting current by adding to the system that allows the units to start one by one.

**MCFH-13NV - [E4] MCFH-24NV - [E3] MUCFH-13NV - [E4] MUCFH-24NV - [E3]**

**MCFH-18NV - [E3] MUCFH-18NV - [E3]**

#### 10-1. COMPULSORY DEFROSTING MODE FOR SERVICE

By short circuit of the connector JP607 and R853 (MUCFH-13/18NV) / JPG1 and R871 (MUCFH-24NV) on the outdoor deicer P.C. board, defrosting mode can be accomplished regardless of the defrost interval restriction. (See Page 53 or 54.) Defrost thermistor RT61 must read below -3°C.

#### 10-2. CHANGE IN DEFROST SETTING

**MUCFH-13/18NV**

<JPC> when the JPC wire of the deicer P.C. board is cut, the defrost interval time will be changed. (See page 53.)

<JPE> when the JPE wire of the deicer P.C. board is cut, the defrost temperature will be changed. (See page 53.)

**MUCFH-24NV**

<JRF> When the JRF wire of the deicer P.C. board is cut, the defrost interval time will be changed.

<JRG> When the JRG wire of the deicer P.C. board is cut, the defrost temperature will be changed. (Refer to page 53.)

Model	Jumper wire	Change point
<b>MUCFH-13NV-[E4] MUCFH-18NV-[E3]</b>	JPC	Defrost interval time changes from 40 minutes to 15 minutes.
	JPE	Defrost start temperature changes from -3°C to 0°C. Defrost finish temperature changes from 3.1°C to 10.1°C.
<b>MUCFH-24NV-[E3]</b>	JRF	Defrost interval time changes from 40 minutes to 15 minutes.
	JRG	Defrost start temperature does not change.(-3.0°C) Defrost finish temperature changes from 3.1°C to 15°C.

#### 10-3. TIMER SHORT MODE

For service, set time can be shortened by short circuit of JPG and JPS on the electronic control P.C. board.

The time will be shortened as follows.

3-minutes time delay : 3-minutes → 3-seconds

AUTO START : 1 hour → 1-minute } Short the connector during the timer mode.

AUTO STOP : 1 hour → 1-minute }

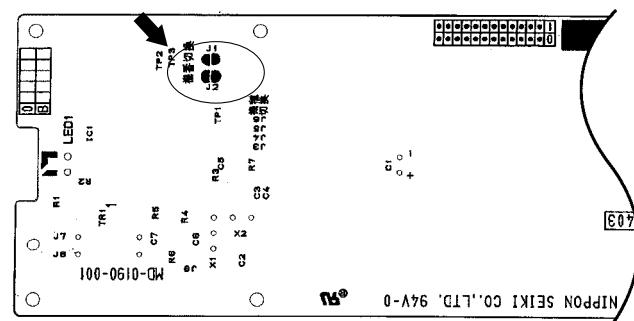
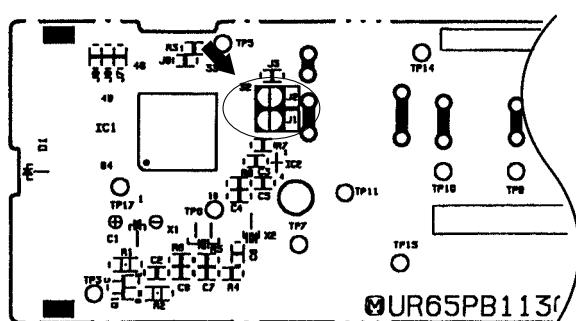
#### 10-4. P.C. BOARD MODIFICATION FOR INDIVIDUAL OPERATION

A maximum of 4 indoor units with wireless remote controllers can be used in a room. In this case, to operate each indoor unit individually by each remote controller, P.C. boards of remote controller must be modified according to the number of the indoor unit.

##### How to modify the remote controller P.C. board

Remove batteries before modification.

The board has a print as shown below;



The P.C. board has the print "J1" and "J2". Solder "J1" and "J2" according to the number of indoor unit as shown in Table 1. After modification, press the RESET button.

Table1.

	1 unit operation	2 units operation	3 units operation	4 units operation
No. 1 unit	No modification	Same as at left	Same as at left	Same as at left
No. 2 unit	—	Solder J1	Same as at left	Same as at left
No. 3 unit	—	—	Solder J2	Same as at left
No. 4 unit	—	—	—	Solder both J1 and J2

**NOTE :** At power supply failure or installation, indoor unit deletes the memory about remote controller. When the power supply is turned on and indoor unit receives the first signals from the remote controller, the remote controller number is designated as the indoor unit number. Therefore at and after the second time indoor unit accepts the remote controller of the initial setting number. At setting-error, turn the power supply off to cancel the individual operation and then turn the power supply on to restart the setting.

#### 10-5. RELEASE OF AUTO RESTART FUNCTION

Solder JHA (refer to page 52) with a jumper line on the indoor electronic control P.C. board.

Remove the auto restart assy from "Connector CN104".

**MCFH-13NV -[E4]** **MCFH-24NV -[E3]** **MUCFH-13NV -[E4]** **MUCFH-24NV -[E3]**  
**MCFH-18NV -[E3]** **MUCFH-18NV -[E3]**

### 11-1. Cautions on troubleshooting

11-1-1. Before troubleshooting, check the followings:

- 1) Check the power supply voltage.
- 2) Check the indoor/outdoor connecting wire for mis-wiring.

11-1-2. Take care the followings during servicing.

- 1) Before servicing the air conditioner, be sure to first turn off the remote controller to stop the main unit, and then after confirming the horizontal vane is closed, turn off the breaker.
- 2) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
- 3) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



### 11-1-3. Troubleshooting procedure

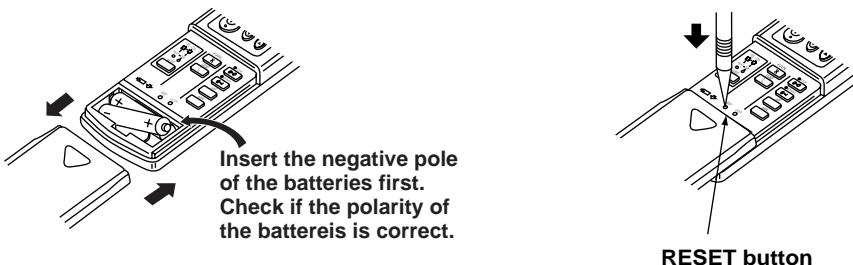
- 1) First, check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality. To make sure, check how many times the abnormality indication is flashing on and off before starting service work.
- 2) If the electronic control P.C. board is supposed to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
- 3) When troubleshooting, refer to the flow chart and the check table on page 43, 44.

### 11-1-4. How to replace batteries

Weak batteries may cause the remote controller malfunction.

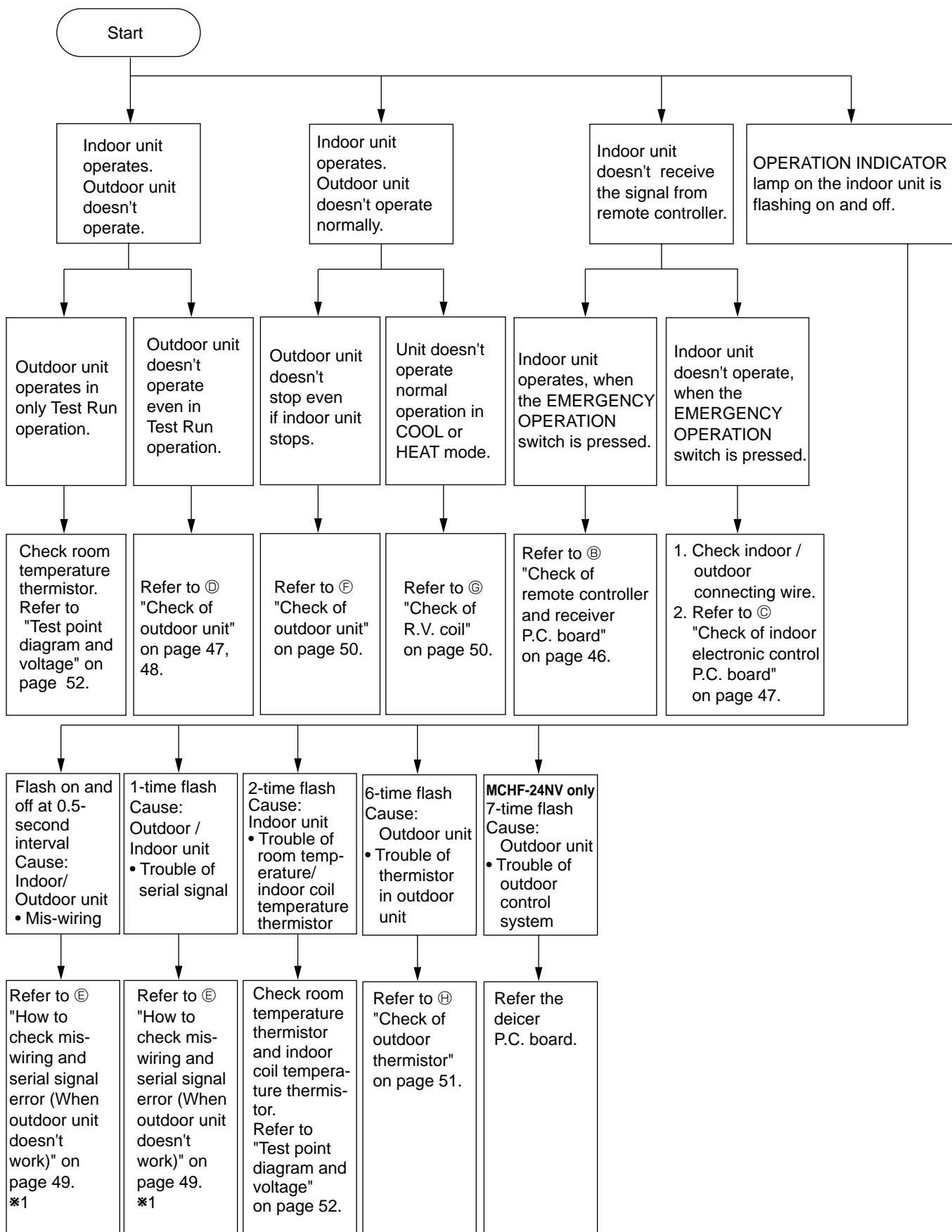
In this case, replace the batteries to operate the remote controller normally.

- ① Remove the front lid and insert batteries. Then reattach the front lid.
- ② Press the RESET button with tip end of ball point pen or the like, and then use the remote controller.



**NOTE :** If the RESET button is not pressed, the remote controller may not operate correctly.

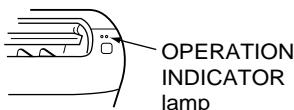
## 11-2. Instruction of troubleshooting



\*1.<The case of the trouble of the serial signal>

When the power is turned off and then turned on again, the indication shows "the trouble of mis-wiring".

## 11-2-1. troubleshooting check table



Before taking measures, make sure that the symptom reappears, for accurate troubleshooting.

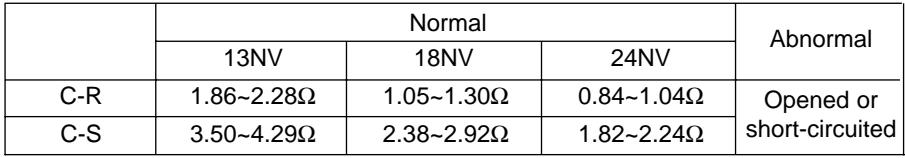
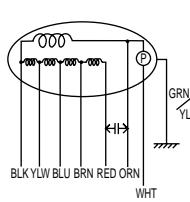
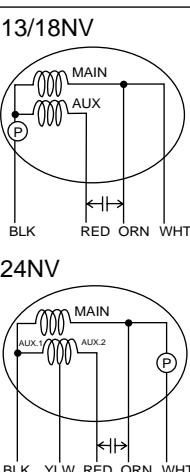
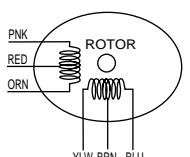
### Self check table

NO.	Abnormal point	Indication	Symptom	Detect method	Check point
1	Mis-wiring	0.5-second ON 	Outdoor unit does not run.	When serial signal stops for 4 to 5 seconds after 1st on of 52C contactor by POWER turning on.	<ul style="list-style-type: none"> <li>● Check wiring (visual check and conductivity check).</li> <li>● Check indoor electronic control P.C.board.</li> <li>● Check outdoor DEICER P.C. board.</li> <li>● Check electrical parts.</li> </ul>
	Serial signal	0.5-second OFF 			
2	Indoor coil thermistor	1-time flash 	Outdoor unit does not run.	When serial signal from outdoor unit stops for 4 to 5 seconds.	<ul style="list-style-type: none"> <li>● Check resistance of thermistor.</li> <li>● Re-connect connector.</li> <li>● Check indoor electronic control P.C.board.</li> </ul>
	Room temperature thermistor	2.5-second OFF 			
3	Defrost thermistor	2-time flash 	Outdoor unit does not run	When the defrost thermistor shorts or opens after the compressor start-up.	<ul style="list-style-type: none"> <li>● Check outdoor DEICER P.C. board.</li> <li>● Check resistance of thermistor.</li> <li>● Re-connect connector.</li> </ul>
* 4	Outdoor power system	5-time flash 	Outdoor unit does not run	When the compressor operation is continuously three times interrupted by over current protection within 1 minute after start-up , it stops operation.	<ul style="list-style-type: none"> <li>● Check the inverter output.</li> <li>● Check the compressor.</li> </ul>
* 5	Outdoor control P.C. board MCFH-24NV only	7-time flash 	Outdoor unit does not run	When it cannot properly read data in the nonvolatile memory of the outdoor control P.C.board.	<ul style="list-style-type: none"> <li>● Check the outdoor control P.C.board.</li> </ul>
* 6	Outdoor refrigerant system error	10-time flash 	Outdoor unit does not run	When the compressor operation has been interrupted by LEV protection continuously 5 minutes, the compressor stops operation.	<ul style="list-style-type: none"> <li>● Amount of gas.</li> <li>● Check the outdoor control P.C. board.</li> <li>● Contact of LEV board connectors.</li> </ul>

\*The indication is shown only when the indoor unit connects with the outdoor unit MXZ-32SV-[E1].

### 11-2-2. Trouble criterion of main parts

**MCFH-13NV -<sub>[E4]</sub> MCFH-18NV -<sub>[E3]</sub> MUCFH-13NV -<sub>[E4]</sub> MUCFH-18NV -<sub>[E3]</sub>**  
**MCFH-24NV -<sub>[E3]</sub> MUCFH-24NV -<sub>[E3]</sub>**

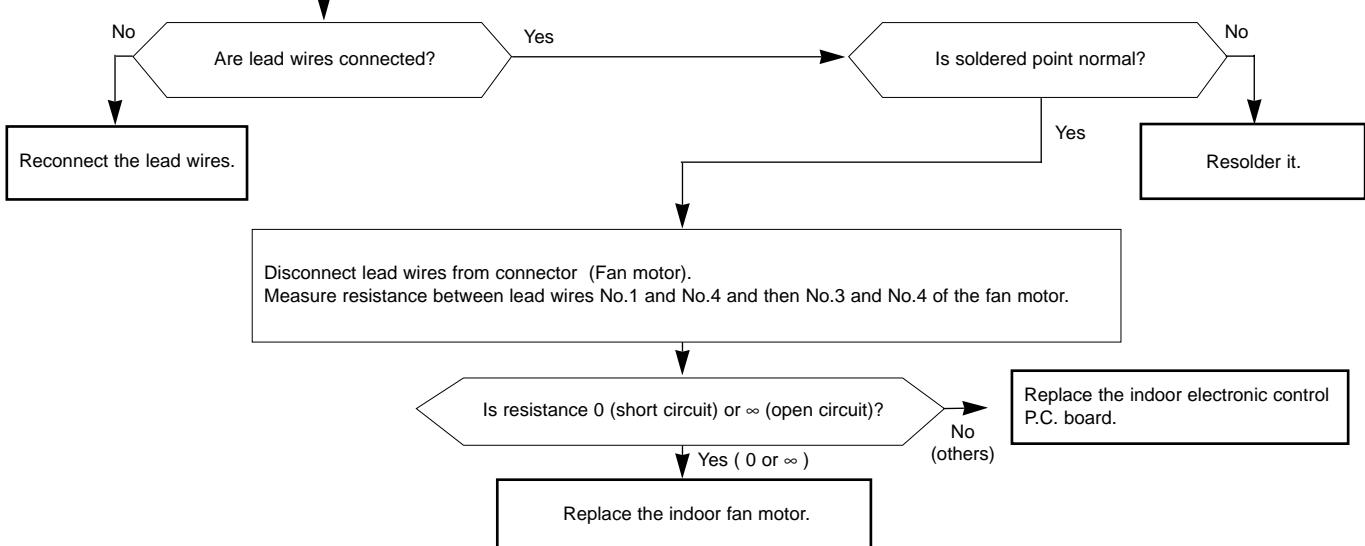
Part name	Check method and criterion			Figure
Room temperature thermistor (RT11)	Measure the resistance with a tester. (Part temperature 10°C ~ 30°C)			
Indoor coil thermistor (RT12)	Normal 8kΩ ~ 20kΩ	Abnormal Opened or short-circuited		
Defrost thermistor (RT61)	Measure the resistance with a tester. (Part temperature - 10°C ~ 40°C)			
Ambient temperature thermistor (RT63) <b>MUCFH-24NV only</b>	Normal 5kΩ ~ 60kΩ	Abnormal Opened or short-circuited		
Compressor (MC)	Measure the resistance between the terminals with a tester. (Part temperature -10°C ~ 40°C)			
Indoor fan motor (MF)	Measure the resistance between the terminals with a tester. (Part temperature 10°C ~ 30°C)			13/18/24NV 
Outdoor fan motor (MF)	Measure the resistance between the terminals with a tester. (Part temperature -10°C ~ 40°C)			13/18NV 24NV 
Vane motor (MV)	Measure the resistance between the terminals with a tester. (Part temperature 10°C ~ 30°C)			

(P): Inner protector

## A Check of indoor fan motor

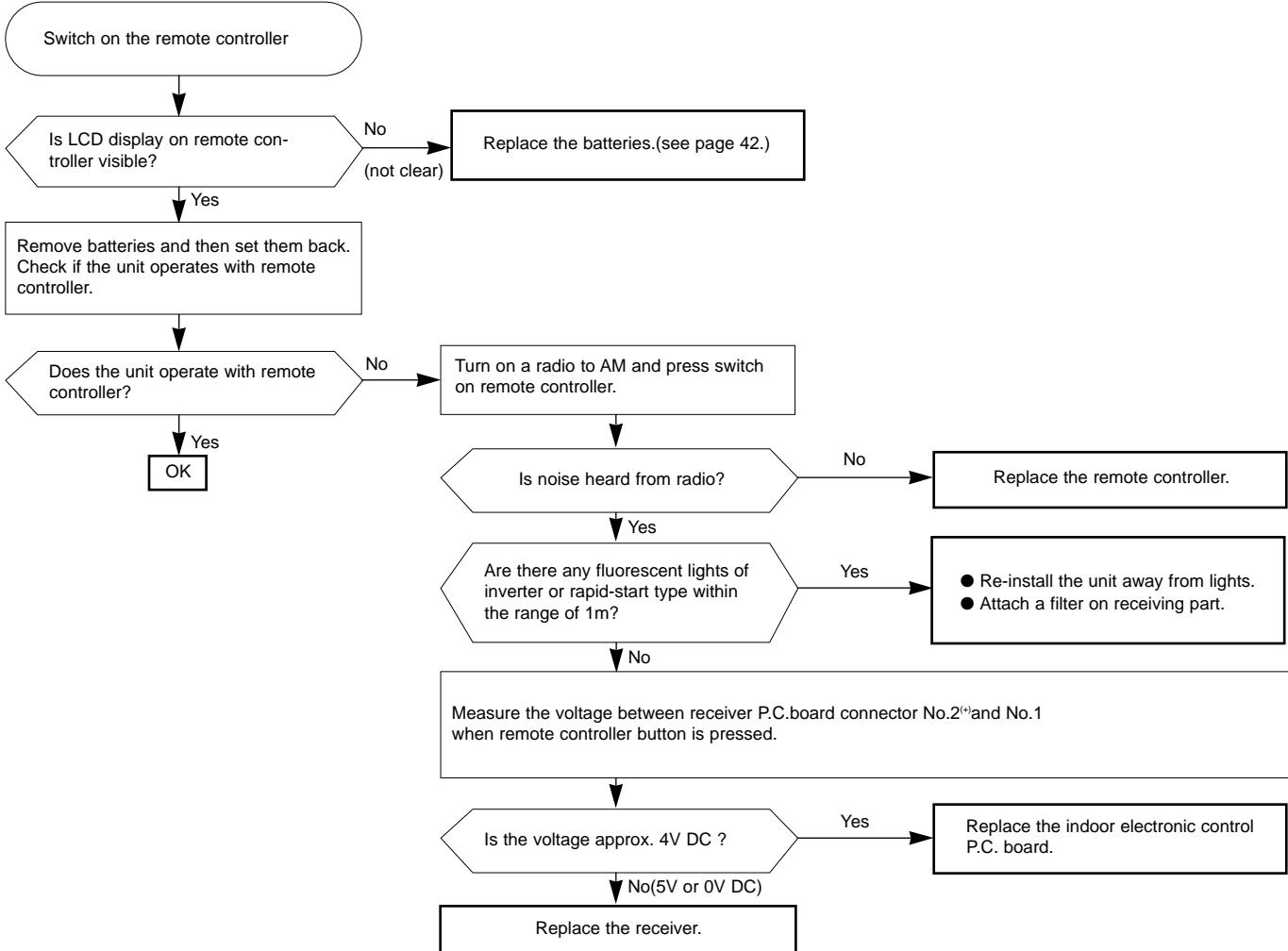
Indoor fan does not operate.

Turn OFF power supply.  
Check connector (Fan motor) visually.



## B Check of receiver P.C. board

Indoor unit operates by pressing the EMERGENCY OPERATION switch, but does not operate with the remote controller.

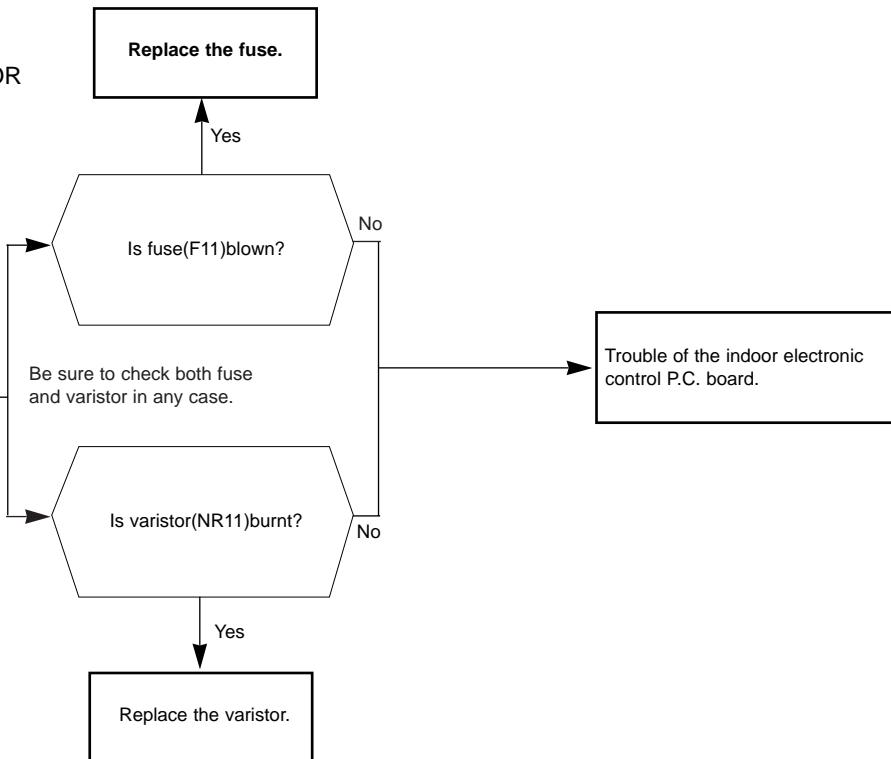


### C Check of indoor electronic control P.C. board

The unit doesn't operate with the remote controller.

Also, the OPERATION INDICATOR lamp doesn't light up by pressing the EMERGENCY OPERATION switch.

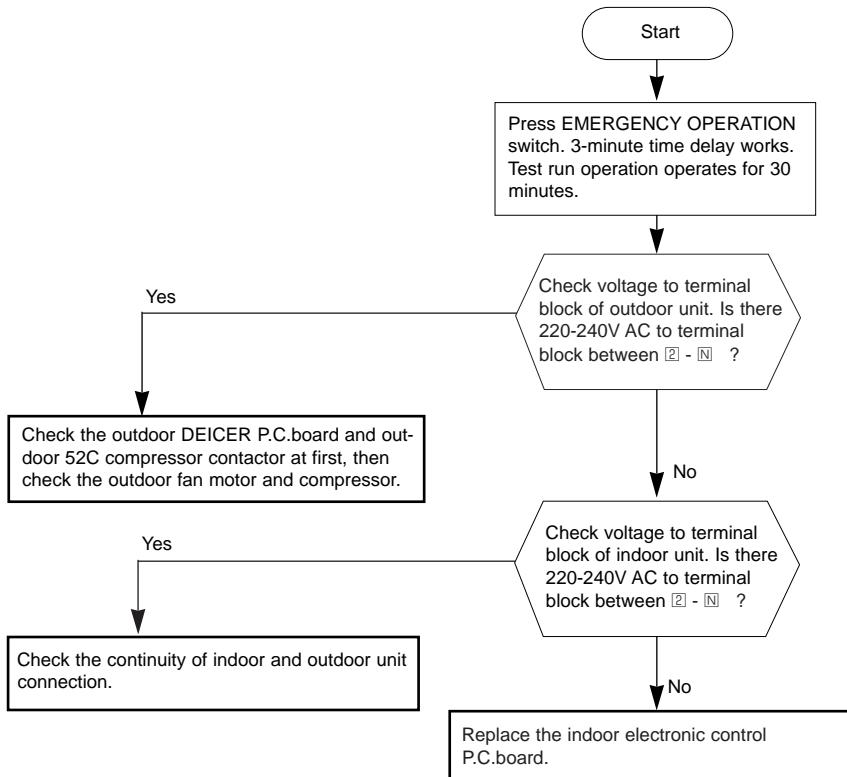
Check both "parts side" and "pattern side" of indoor electronic control P.C. board visually.



### D Check of outdoor unit

**Compressor and outdoor fan do not operate.(Only indoor fan operates.)**

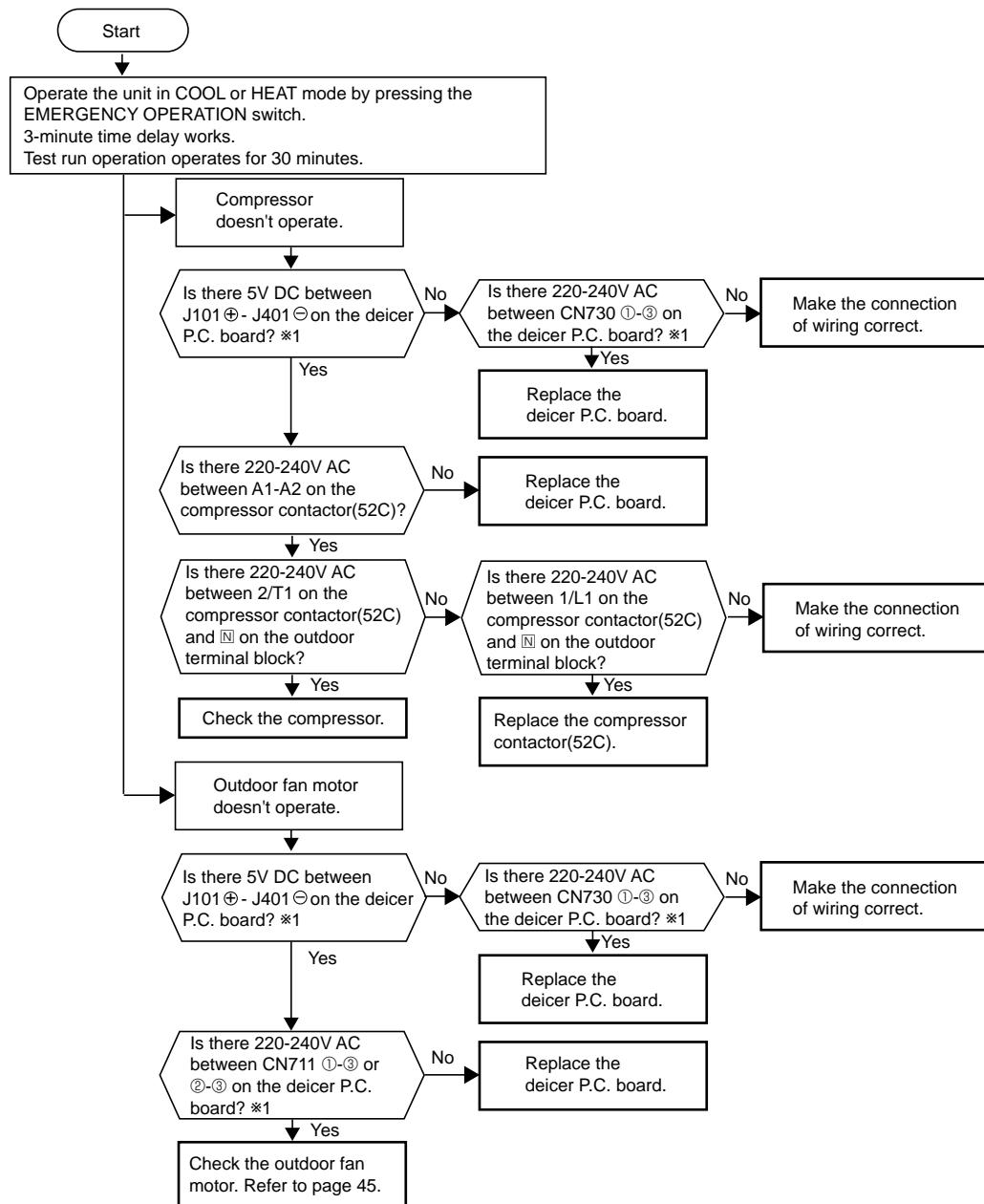
MCFH-13NV -<sub>[E4]</sub> MCFH-18NV -<sub>[E5]</sub>



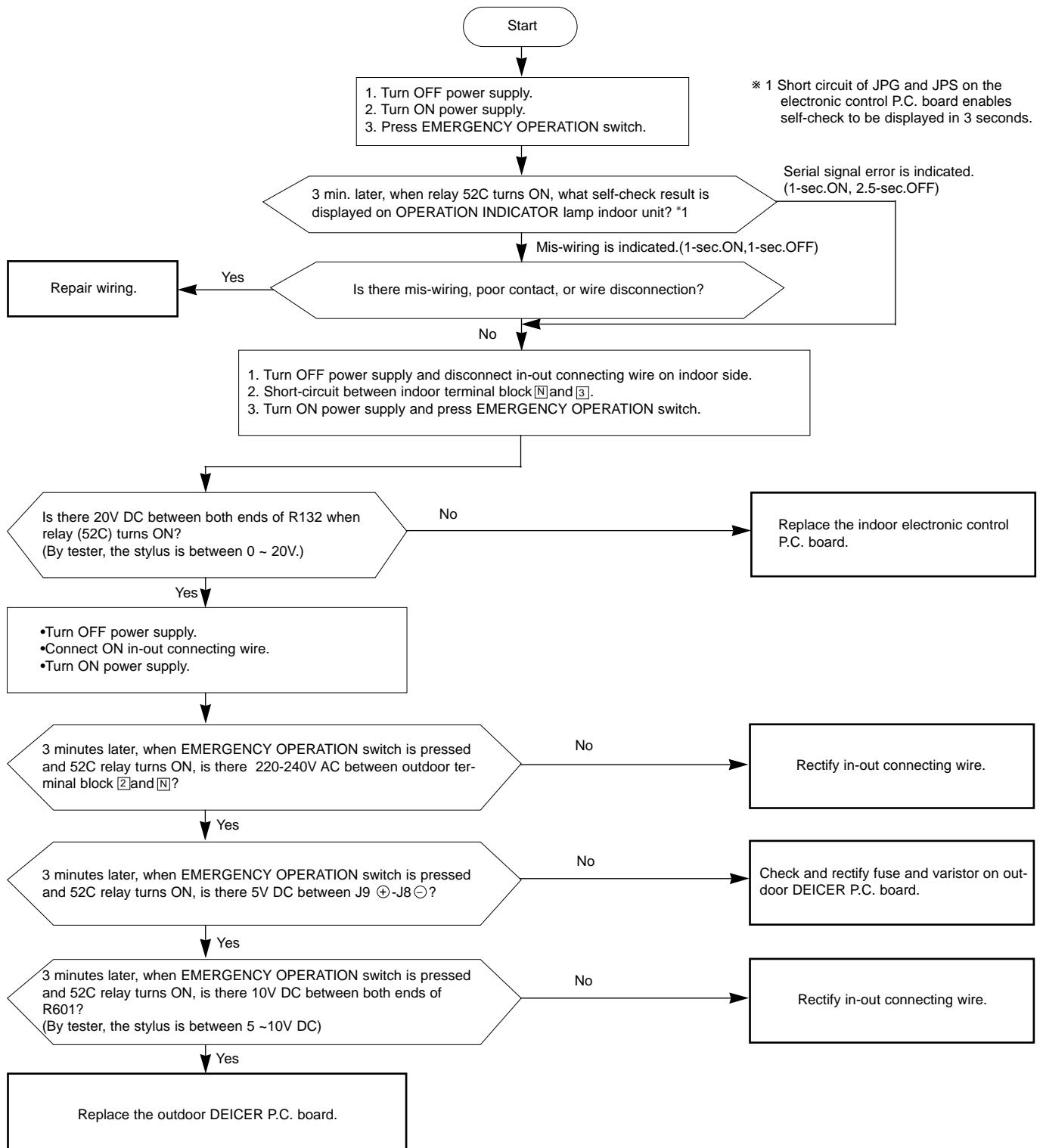
## D Check of outdoor unit

**Compressor and outdoor fan do not operate.(Only indoor fan operates.)**

MCFH-24NV - E3



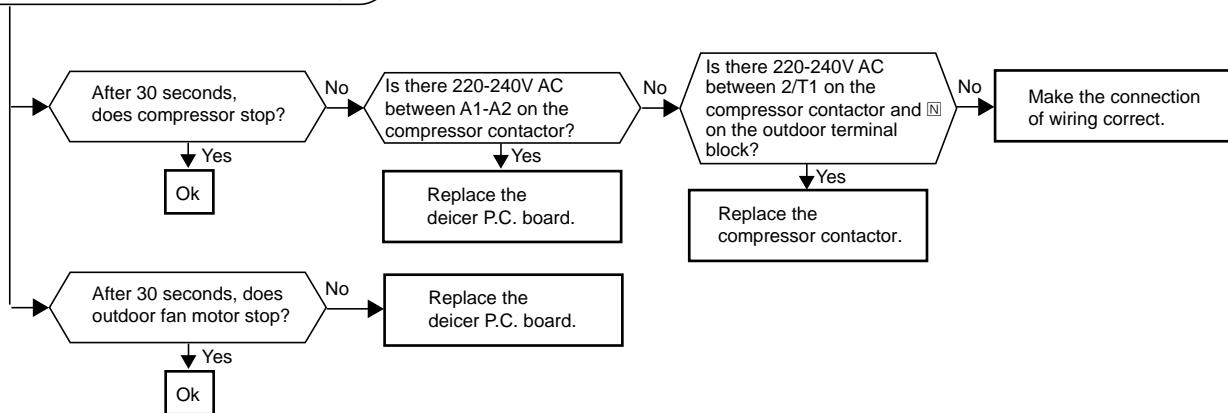
## ⑤ How to check mis-wiring and serial signal error (when outdoor unit does not work)



## F Check of outdoor unit

**Compressor and / or outdoor fan motor doesn't stop.**

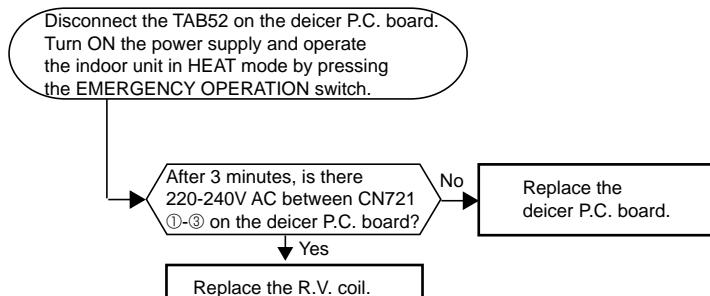
- ① Turn OFF the power supply.
- ② After 30 seconds, turn ON the power supply again.
- ③ Operate the unit in COOL or HEAT mode by pressing the EMERGENCY OPERATION switch.
- ④ Operate the unit for 1 minute or more and stop it by pressing the EMERGENCY OPERATION switch again.



## G Check of R.V. coil

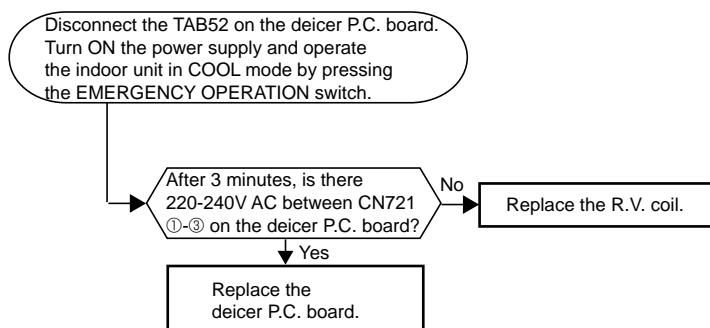
**Unit operates COOL mode even if it is set to HEAT mode.**

\* First, measure the resistance of R.V. coil to confirm it is disconnected or is not short-circuit.



**Unit operates HEAT mode even if it is set to COOL mode.**

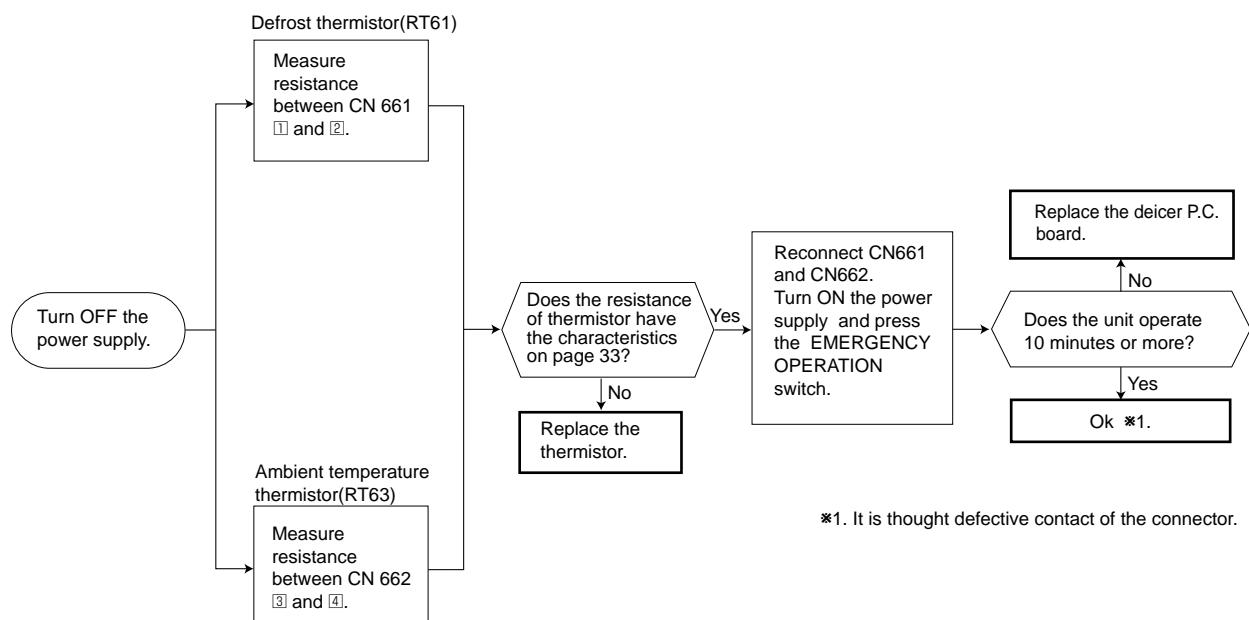
\* First, measure the resistance of R.V. coil to confirm it is disconnected or is not short-circuit.



## (H) Check of outdoor thermistor

**Thermistors in the outdoor unit are abnormal.**

\* Disconnect the connectors CN661 and/or CN662 from the deicer P.C. board.  
(Check the characteristics of each thermistor.)



\*1. It is thought defective contact of the connector.

## TEST POINT DIAGRAM AND VOLTAGE

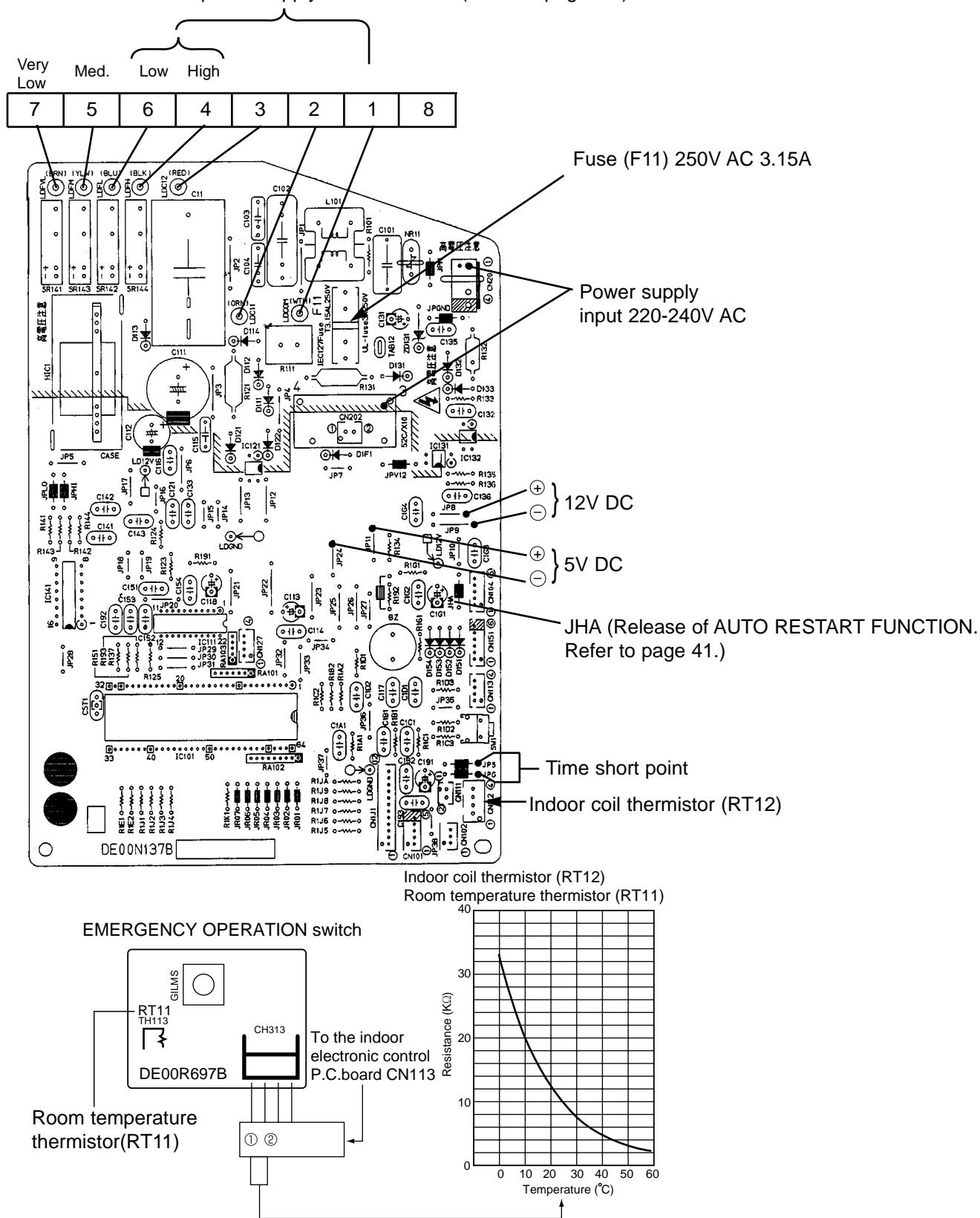
**MCFH-13NV** - **E4**

**MCFH-18NV** - **E3**

**MCFH-24NV** - **E3**

Indoor electronic control P.C. board

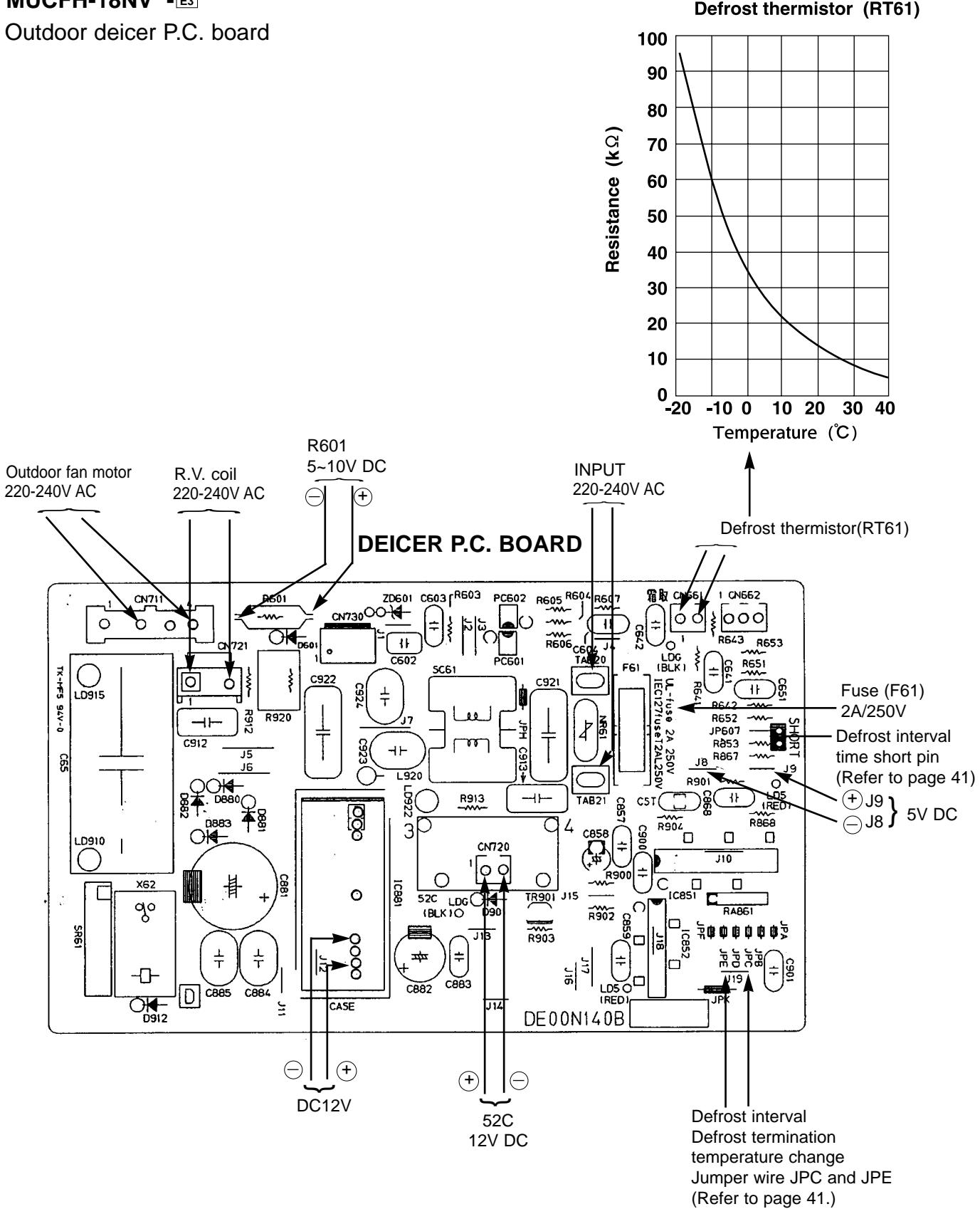
Fan motor power supply 220 - 240V AC (Refer to page 46.)



**MUCFH-13NV - E4**

**MUCFH-18NV - E3**

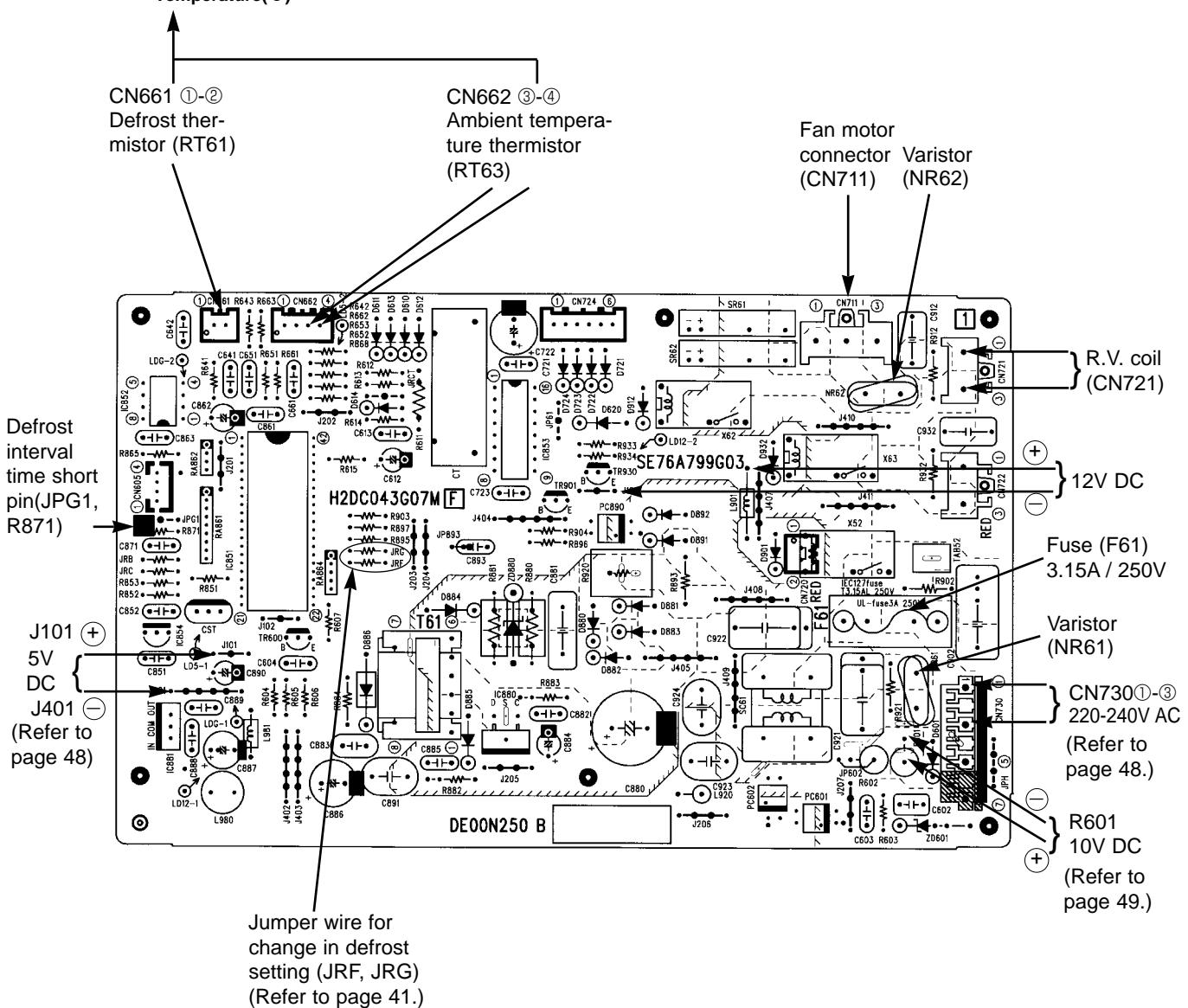
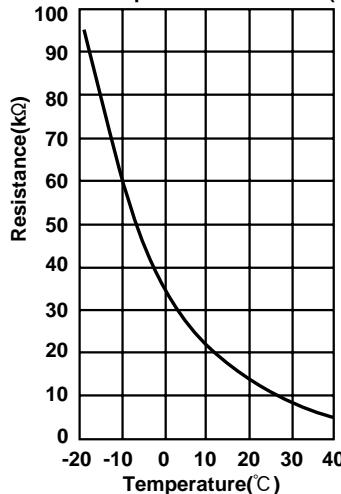
## Outdoor deicer P.C. board



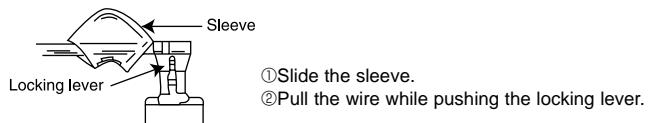
## MUCFH-24NV - E3

Outdoor deicer P.C. board

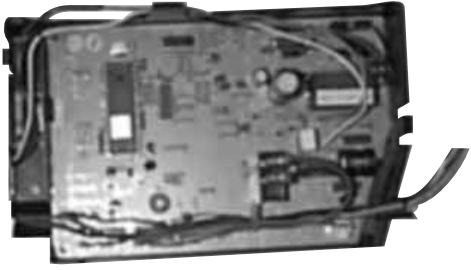
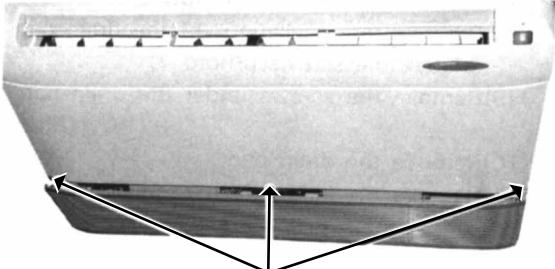
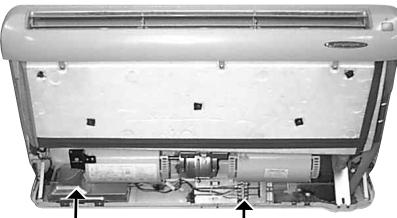
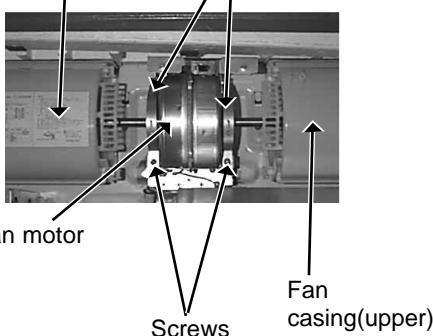
Defrost thermistor (RT61)  
Ambient temperature thermistor (RT63)

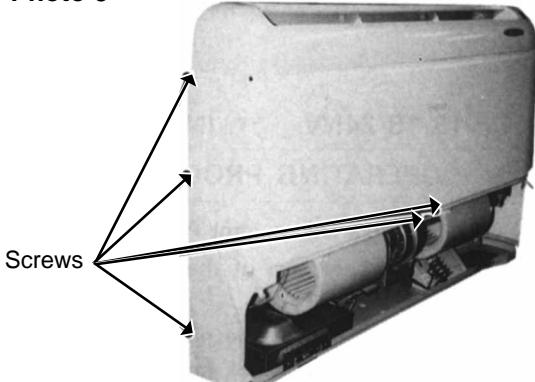
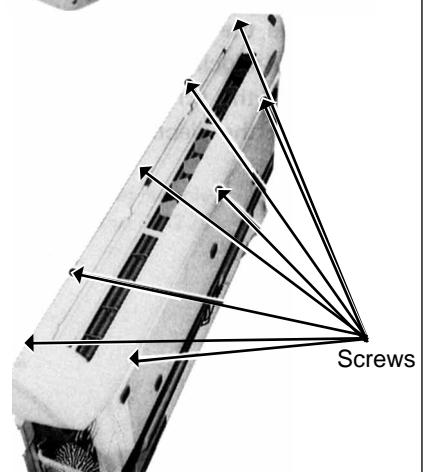
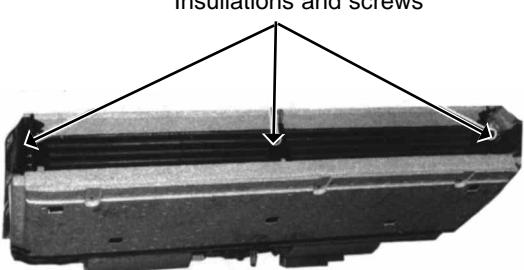
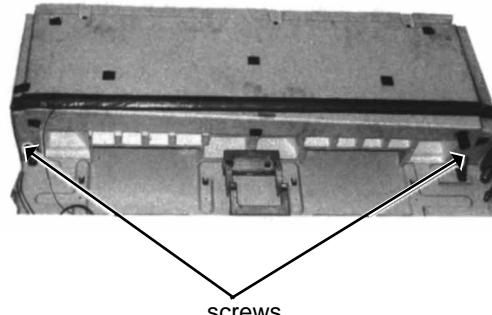


"※" shows the terminals with a lock mechanism, so they cannot be removed when you pull the lead wire.  
Be sure to pull the wire by pushing the locking lever (project part) of the terminal with a finger.

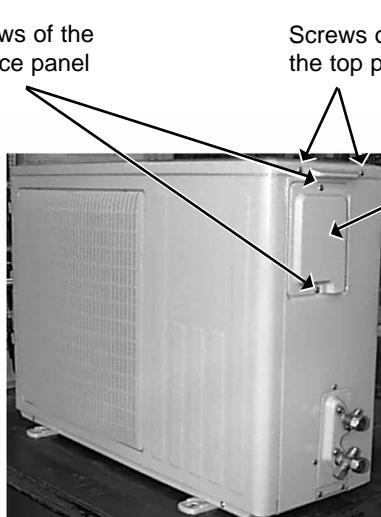
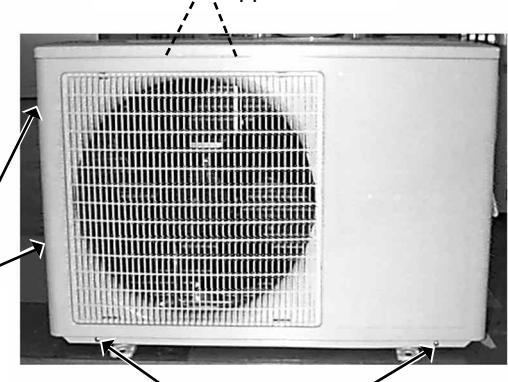
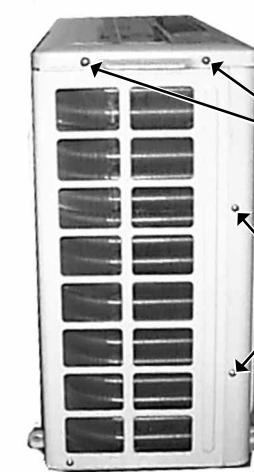
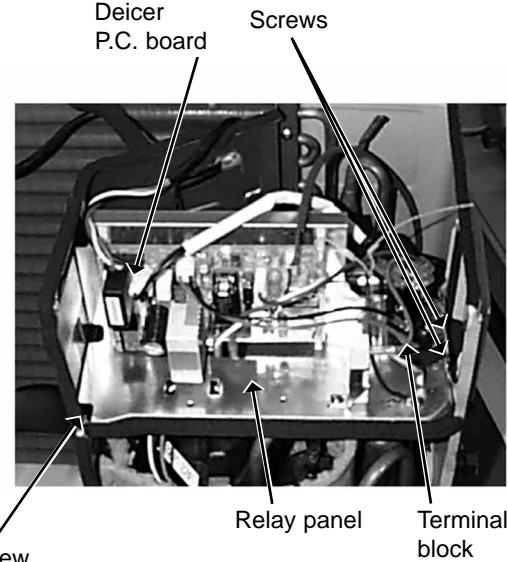


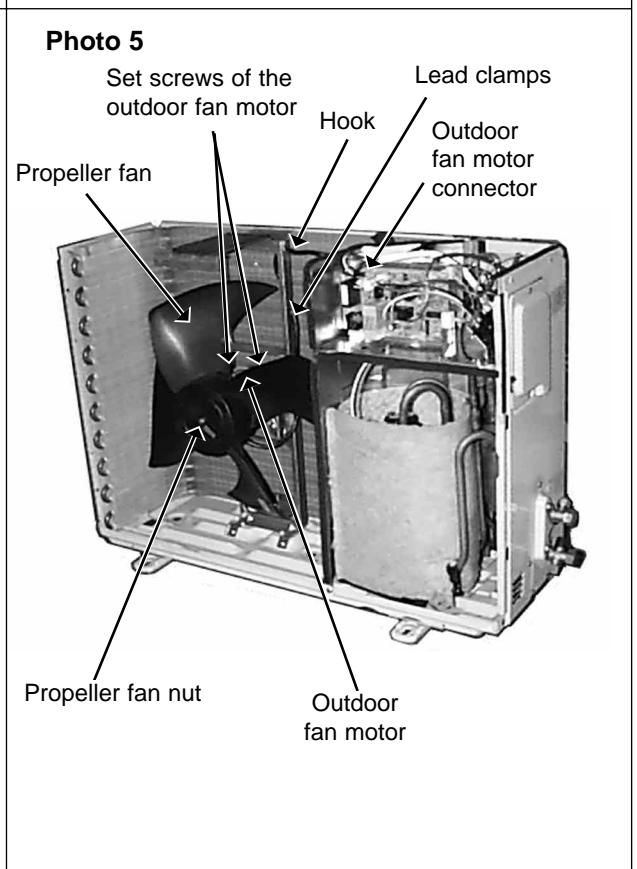
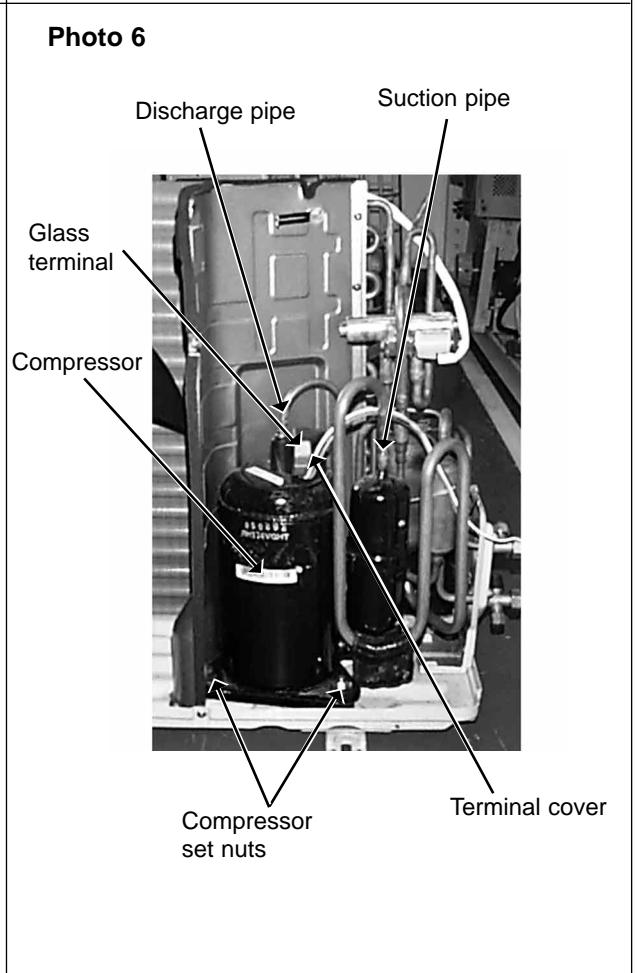
## 12-1. MCFH-13NV-E4, MCFH-18NV-E3, MCFH-24NV-E3 INDOOR UNIT

OPERATING PROCEDURE	PHOTOS
<p><b>1. Removing the electronic control P. C . board.</b></p> <ul style="list-style-type: none"> <li>(1) Pull out the upper part of the grill. ( photo 1 )</li> <li>(2) Remove the screws of the grill.</li> <li>(3) Remove screws of terminal block cover. Remove the terminal block cover and remove the terminal block.</li> <li>(4) Remove the screws of the electronic box cover.</li> <li>(5) Pull out the electronic control P. C. board.</li> </ul> <p><b>Photo 3</b></p>  <p>Electronic control P.C. board</p>	<p><b>Photo 1</b></p>  <p>Screws</p> <p><b>Photo 2</b></p>  <p>Electronic box</p> <p>Terminal block</p>
<p><b>2. Removing the indoor fan motor</b></p> <ul style="list-style-type: none"> <li>(1) Remove the grill. ( Refer to 1(1) (2) )</li> <li>(2) Remove the screws of the pipe support assembly.</li> <li>(3) Remove the fan casings.(upper) .</li> <li>(4) Disconnect the connector of the indoor fan motor.</li> <li>(5) Disconnect the ground wire of the fan motor.</li> <li>(6) Remove the screws of the motor band and remove the catch.</li> <li>(7) Take out the sirocco fan and the indoor fan motor .</li> </ul>	<p><b>Photo 4</b></p> 

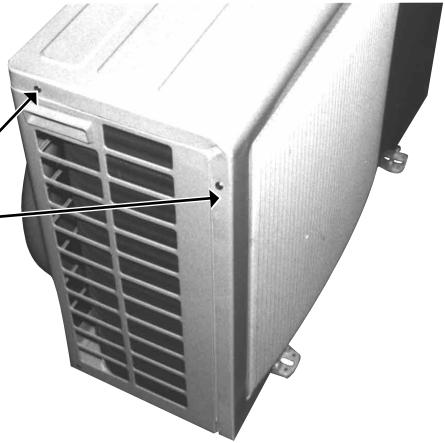
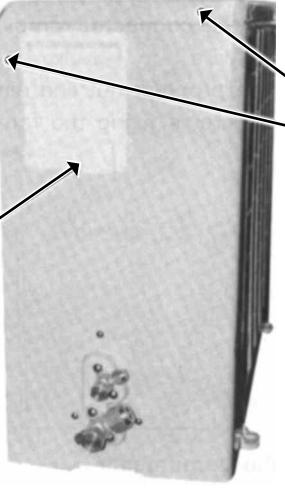
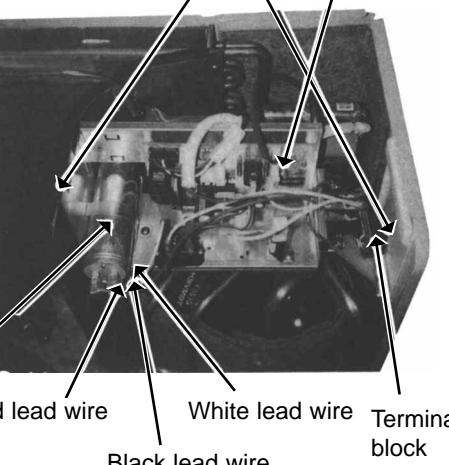
OPERATING PROCEDURE	PHOTOS
<p><b>3. Removing the indoor heat exchanger.</b></p> <p>(1) Remove the grill. (Refer to 1(1) (2))      (2) Remove the screws on both side and in front of the front panel. (Photo 5)      (3) Remove the screws of the nozzle assembly. (Photo 6)      (4) Remove the electronic box . (Refer to 1)      (5) Remove the indoor fan motor . (Refer to 2)      (6) Remove the screws of the motor support .      (7) Remove the fan casing . (lower)      (8) Remove the insullations of the drain pan and remove the screws . (Photo 7)      (9) Remove the screws under the drain pan .(Photo 8)      (10) Remove the drain pan .      (11) Remove the indoor heat exchanger.</p>	<p><b>Photo 5</b></p>  <p><b>Photo 6</b></p>  <p><b>Photo 7</b></p>  <p><b>Photo 8</b></p> 

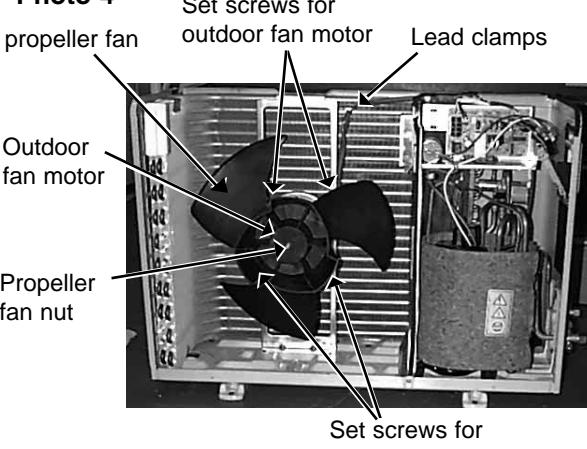
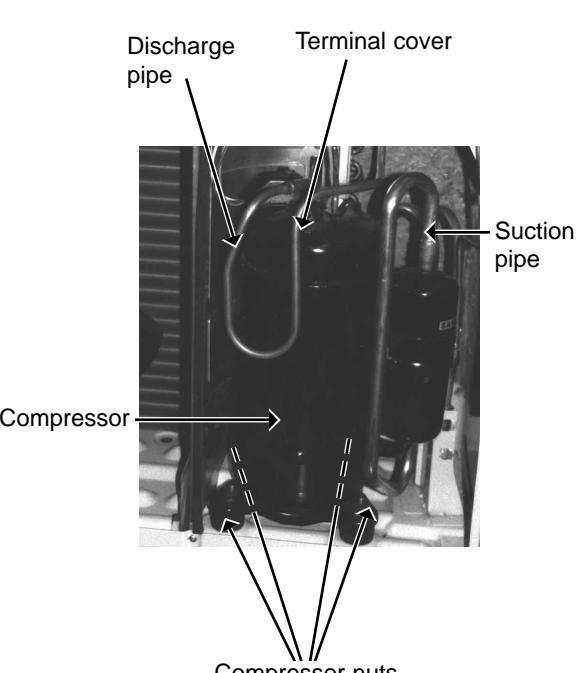
## 12-2. MUCFH-13NV -E4 OUTDOOR UNIT

OPERATING PROCEDURE	PHOTOS
<p><b>1. Removing the cabinet</b></p> <ul style="list-style-type: none"> <li>(1) Remove the screws of the top panel.</li> <li>(2) Remove the screws of the service panel.</li> <li>(3) Remove the screws of the cabinet.</li> <li>(4) Remove the screws of the front panel and motor support.</li> <li>(5) Remove the service panel, and remove the screw from the insides.</li> <li>(6) Remove the top panel.</li> <li>(7) Remove the cabinet.</li> </ul> <p><b>Photo 3</b></p>  <p>Screws of the service panel      Screws of the top panel  Service panel</p>	<p><b>Photo 1</b></p>  <p>Screws of the front panel and motor support  Screws of the cabinet  Screws of the cabinet</p>
<p><b>2. Removing the deicer P.C. board</b></p> <ul style="list-style-type: none"> <li>(1) Remove the service panel and the cabinet.</li> <li>(2) Disconnect all the connectors and the terminals on the deicer P.C. board.</li> <li>(3) Remove the deicer P.C. board.</li> </ul>	<p><b>Photo 2</b></p>  <p>Screws of the top panel  Screws of the cabinet</p> <p><b>Photo 4</b></p>  <p>Deicer P.C. board  Screws  Relay panel  Terminal block  Screw</p>

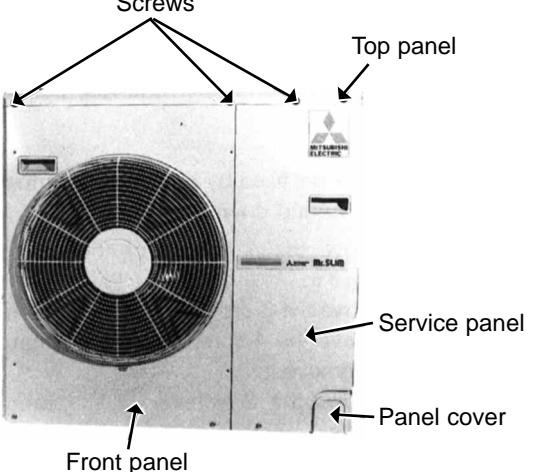
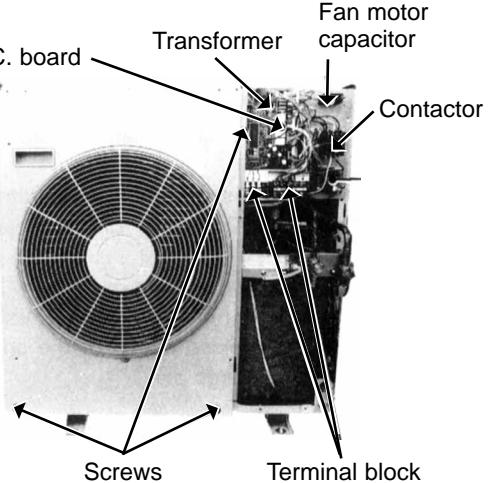
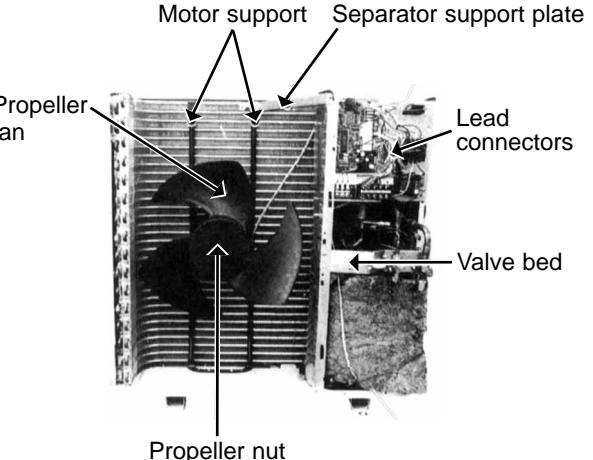
OPERATING PROCEDURE	PHOTOS
<p><b>3. Removing the propeller fan and the outdoor fan motor</b></p> <p>(1) Remove the cabinet. (Refer to 1)  (2) Remove the propeller fan nut.  (3) Remove the propeller fan.</p> <p><b>NOTE : Loose the propeller fan in the rotating direction for removal.</b></p> <p>When attaching the propeller fan, align the mark on the propeller fan and the motor shaft cut section.  Set the propeller fan in position by using the cut on the shaft and the mark on the propeller fan.</p> <p>(4) Remove lead clamps and disconnect the outdoor fan motor connector.  (5) Remove screws fixing the fan motor.  (6) Remove the outdoor fan motor.</p>	<p><b>Photo 5</b></p>  <p>Propeller fan Propeller fan nut Set screws of the outdoor fan motor Lead clamps Hook Outdoor fan motor connector Outdoor fan motor</p>
<p><b>4. Removing the compressor</b></p> <p>(1) Remove the cabinet. (Refer to 1)  (2) Remove the relay panel.  (3) Remove the soundproof felt.  (4) Remove the terminal cover on the compressor.  (5) Disconnect lead wires from the glass terminal of the compressor.  (6) Release gas from the refrigerant circuit.  (7) Disconnect the welded part of the discharge pipe.  (8) Disconnect the welded part of the suction pipe.  (9) Remove nuts fixing the compressor.  (10) Remove the compressor.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>● Before using a burner, purge gas from the pipes until the pressure gauge shows 0 kg/cm<sup>2</sup>.</li> <li>● Use the burner under the condition that gas can be released even when the inner pressure rises by heat.</li> </ul>	<p><b>Photo 6</b></p>  <p>Discharge pipe Suction pipe Glass terminal Compressor Compressor set nuts Terminal cover</p>

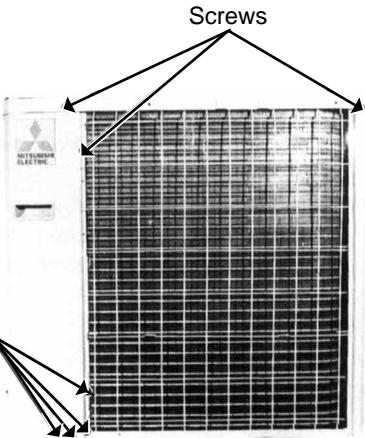
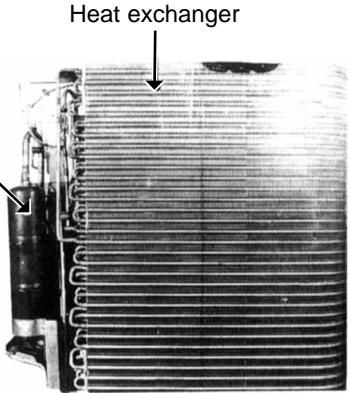
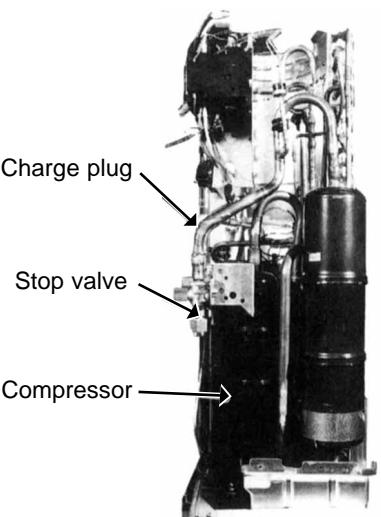
## 12-3. MUCFH-18NV -E3 OUTDOOR UNIT

OPERATING PROCEDURE	PHOTOS
<p><b>1. Removing the cabinet</b></p> <p>(1) Remove the screws of the cabinet.  (2) Hold the bottom of the cabinet on the both side to remove the cabinet.</p> <p><b>Photo 2</b></p> 	<p><b>Photo 1</b></p> 
<p><b>2. Removing the deicer P.C. board</b></p> <p>(1) Remove the service panel and the cabinet.  (2) Disconnect all the connectors and the terminals on the deicer P.C. board.  (3) Remove the deicer P.C. board.</p>	<p><b>Photo 3</b></p>  <p>Screws Deicer P.C. board Compressor Red lead wire White lead wire Black lead wire Terminal block</p>

OPERATING PROCEDURE	PHOTOS
<p><b>3. Removing the outdoor fan motor</b></p> <p>(1) Remove the cabinet. (Refer to 1)  (2) Unconnect the connector remove the clamp of fan motor lead wire.  (3) Remove the propeller nut and remove the propeller.  (4) Remove screws fixing the fan motor.</p>	<p><b>Photo 4</b></p>  <p>propeller fan Outdoor fan motor Propeller fan nut Set screws for outdoor fan motor Lead clamps</p>
<p><b>4. Removing the compressor</b></p> <p>(1) Remove the cabinet. (Refer to 1)  (2) Remove the soundproof felt.  (3) Remove the terminal cover on the compressor  (4) Remove the electrical assembly.  (Refer to 2)  (5) Release gas from the refrigerant circuit.  (6) Disconnect the welded part of the discharge pipe  (7) Disconnect the welded part of the suction pipe.  (8) Remove nuts fixing the compressor.  (9) Remove the compressor.</p>	<p><b>Photo 5</b></p>  <p>Discharge pipe Terminal cover Suction pipe Compressor Compressor nuts</p>

## 12-4. MUCFH-24NV - [E3] OUTDOOR UNIT

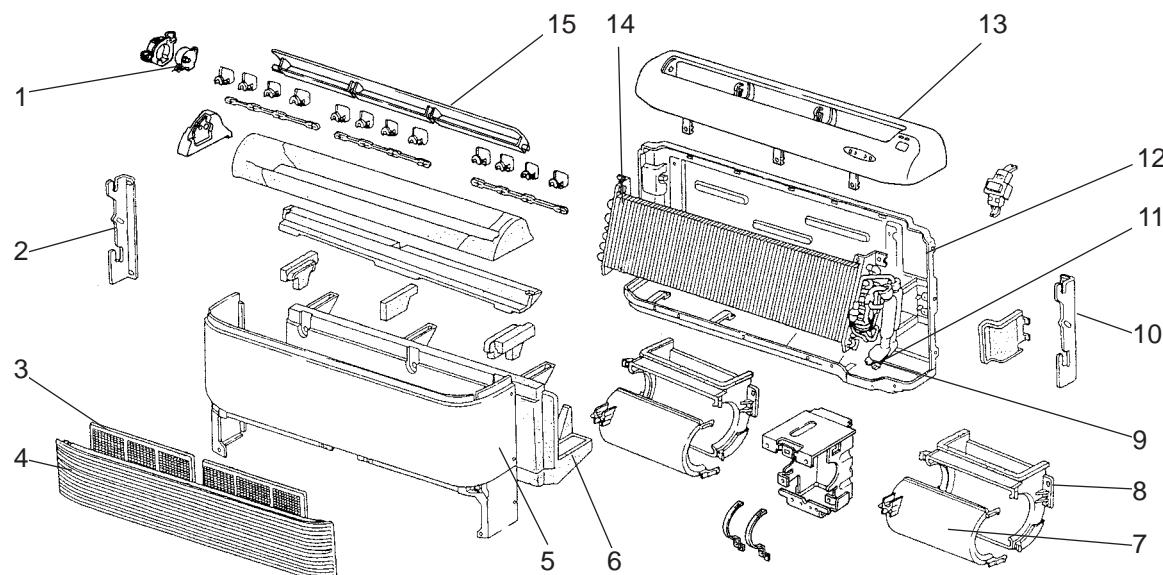
OPERATING PROCEDURE	PHOTOS
<p><b>1. Removing the electrical parts</b></p> <ul style="list-style-type: none"> <li>(1) Remove the 5 screws and the top panel. (3 screws in front and 2 screws in rear)</li> <li>(2) Remove the screw of the cover panel. To remove the cover panel, pull it toward you and unhook the catches from the side panel.</li> <li>(3) Remove the screw of the service panel. To remove the service panel, pull it down toward you and unhook the catches on the both sides.</li> </ul>	<p><b>Photo 1</b></p>  <p>The image shows the front view of the outdoor unit. Labels with arrows point to the following components:      - Top panel: The uppermost cover.      - Service panel: A small panel located below the top panel.      - Panel cover: A cover on the right side.      - Front panel: The main face of the unit.      - Screws: Indicated by arrows pointing to the top panel and the service panel.</p> <p><b>Photo 2</b></p>  <p>The image shows the internal electrical components of the unit. Labels with arrows point to:      - Deicer P.C. board: A printed circuit board.      - Transformer: A component connected to the board.      - Fan motor capacitor: A capacitor connected to the fan motor.      - Contactor: An electrical switch.      - Terminal block: A block for connecting wires.      - Screws: Indicated by arrows pointing to the board and the terminal block.</p>
<p><b>2. Removing the fan motor</b></p> <ul style="list-style-type: none"> <li>(1) Remove the 3 screws of the front panel. Open the front panel to a 45-degree angle. Then lift it and unhook the 3 catches to remove.</li> <li>(2) Remove the propeller nut and the propeller.</li> <li>(3) Remove the 3 screws and the fan motor. Disconnect the lead connectors.</li> </ul>	<p><b>Photo 3</b></p>  <p>The image provides a detailed view of the fan motor assembly. Labels with arrows point to:      - Propeller fan: The rotating blades.      - Motor support: The supports holding the motor.      - Separator support plate: A plate separating components.      - Lead connectors: Wires connected to the motor.      - Valve bed: A component at the bottom right.      - Propeller nut: The nut that secures the propeller to the shaft.</p>

OPERATING PROCEDURE	PHOTOS
<p><b>3. Removing the heat exchanger and the compressor</b></p> <p>(1) Remove the rear panel (2 screws in front, 1 screw on the side, 3 screws in the rear). Remove the valve bed, and open the rear panel to the rear to remove.</p> <p><b>NOTE :</b> All panels are fixed by catches, and must be removed by shifting up and down.</p> <p>(2) Remove the 4 screws of the right side panel and remove it.</p> <p>(3) Remove the 3 screws of the rear guard and remove it.</p> <p>(4) Remove the 4 screws of the separator support plate and remove it.</p> <p>(5) Remove the 2 screws of the motor support and remove it.</p> <p>(6) Remove the 5 screws of the valve bed. The valve bed is fixed by the catches on the right and left sides. Lift it to remove.</p> <p>(7) Remove the electrical parts box. Disconnect the connectors from the high pressure switch, crank case heater, shell thermo, and fan motor lead.</p> <p>(8) Remove the 2 screws of the separator and remove it.</p> <p>(9) Remove the 2 screws of the heat exchanger and remove it. Detach the welded point of pipe.</p> <p>(10) Remove the 3 nuts of the compressor and remove it. Detach the welded points of the compressor suction pipe and discharge pipe.</p>	<p><b>Photo 4</b></p>  <p><b>Photo 5</b></p>  <p><b>Photo 6</b></p> 

## 13-1. INDOOR UNIT

## STRUCTURAL PARTS

MCFH-13NV -**E1**(WH) MCFH-13NV -**E2**(WH) MCFH-13NV -**E3**(WH) MCFH-13NV -**E4**(WH)  
 MCFH-18NV -**E1**(WH) MCFH-18NV -**E2**(WH) MCFH-18NV -**E3**(WH)  
 MCFH-24NV -**E1**(WH) MCFH-24NV -**E2**(WH) MCFH-24NV -**E3**(WH)

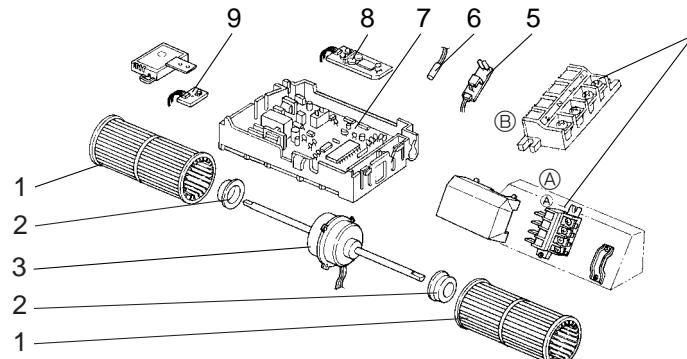


Part number that are circled is not shown in the illustration.

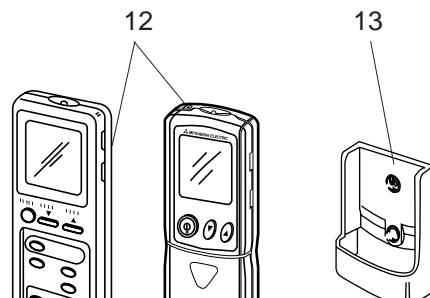
No.	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit										Remark	
				MCFH-											
				13NV		18NV		24NV							
				[E1] WH	[E2] WH	[E3] WH	[E4] WH	[E1] WH	[E2] WH	[E3] WH	[E1] WH	[E2] WH	[E3] WH		
1	E02 227 303	VANE MOTOR	VM	1	1	1	1	1	1	1	1	1	1	1	
2	E02 179 971	INSTALLATION METAL (L)		1	1	1	1	1	1	1	1	1	1	1	
3	E02 179 100	AIR FILTER		2	2	2	2	2	2	2	2	2	2	2	
4	E02 179 010	GRILLE		1	1	1	1	1	1	1	1	1	1	1	
5	E02 179 000	FRONT PANEL ASSEMBLY		1	1	1	1	1	1	1	1	1	1	1	
6	E02 215 700	DRAIN PAN		1	1	1	1	1	1	1	1	1	1	1	
7	E02 179 237	FAN CASING (U)		2	2	2	2	2	2	2	2	2	2	2	
8	E02 179 238	FAN CASING (L)		2	2	2	2	2	2	2	2	2	2	2	
9	E02 179 667	UNION (GAS)		1	1	1	1							φ12.7	
	E02 138 666	UNION (GAS)						1	1	1	1	1	1	φ15.88	
10	E02 179 972	INSTALLATION METAL (R)		1	1	1	1	1	1	1	1	1	1	1	
11	E02 176 667	UNION (LIQUID)									1	1	1	φ9.52	
	E02 138 667	UNION (LIQUID)		1	1	1	1	1	1	1				φ6.35	
12	E02 179 231	BACK PANEL		1	1	1	1	1	1	1	1	1	1	1	
13	E02 227 235	NOZZLE		1	1	1	1	1	1	1	1	1	1	1	
14	E02 179 620	INDOOR HERT EXCHANGER		1	1	1	1	1	1	1	1	1	1	1	
15	E02 227 040	VANE		1	1	1	1	1	1	1	1	1	1	1	
16	E02 179 142	GRILLE CATCH		3	3	3	3	3	3	3	3	3	3	3PCS/SET	

MCFH-13NV - E1 (WH) MCFH-13NV - E2 (WH) MCFH-13NV - E3 (WH) MCFH-13NV - E4 (WH)  
 MCFH-18NV - E1 (WH) MCFH-18NV - E2 (WH) MCFH-18NV - E3 (WH)  
 MCFH-24NV - E1 (WH) MCFH-24NV - E2 (WH) MCFH-24NV - E3 (WH)

### 13-2. INDOOR UNIT ELECTRICAL PARTS



### 13-3. ACCESSORY AND REMOTE CONTROLLER PARTS



13NV- E1, E2, E3 13NV- E4

18NV- E1, E2 18NV- E3

24NV- E1, E2 24NV- E3

### 13-2. INDOOR UNIT ELECTRICAL PARTS

Part numbers that are circled is not shown in the illustration.

No.	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit										Remark	
				MCFH-											
				13NV				18NV				24NV			
				E1 WH	E2 WH	E3 WH	E4 WH	E1 WH	E2 WH	E3 WH	E4 WH	E1 WH	E2 WH	E3 WH	
1	E02 179 500	SIROCCO FAN		2	2	2	2	2	2	2	2	2	2	2	
2	E02 179 505	FAN MOTOR RUBBER MOUNT		2	2	2	2	2	2	2	2	2	2	2	2PCS/SET
3	E02 228 300	INDOOR FAN MOTOR	MF	1	1	1	1								
	E02 229 300	INDOOR FAN MOTOR	MF					1	1	1	1	1	1	1	
4	E02 573 375	TERMINAL BLOCK	TB	1	1	1	1	1	1	1	1	1	1	1	FigureA
	E02 257 375	TERMINAL BLOCK	TB	1	1	1	1	1	1	1	1	1	1	1	FigureB
5	E02 227 468	RECEIVER P.C. BOARD		1	1	1	1	1	1	1	1	1	1	1	
6	E02 327 307	INDOOR-COIL THERMISTOR	RT12	1	1	1	1	1	1	1	1	1	1	1	
	E02 254 450	ELECTRONIC CONTROL P.C. BOARD		1											
	E02 255 450	ELECTRONIC CONTROL P.C. BOARD						1							
7	E02 256 450	ELECTRONIC CONTROL P.C. BOARD										1			
	E02 327 450	ELECTRONIC CONTROL P.C. BOARD			1	1	1								
	E02 328 450	ELECTRONIC CONTROL P.C. BOARD							1	1					
	E02 329 450	ELECTRONIC CONTROL P.C. BOARD										1	1		
8	E02 324 452	AUTO RESTART ASSEMBLY				1	1	1		1	1		1	1	
9	E02 215 328	SWITCH BOARD			1	1	1	1	1	1	1	1	1	1	
⑩	E02 085 385	VARISTOR	NR11	1	1			1	1			1	1		
	E02 336 385	VARISTOR	NR11			1	1				1			1	
⑪	E02 127 382	FUSE	F11	1	1	1	1	1	1	1	1	1	1	1	3.15A

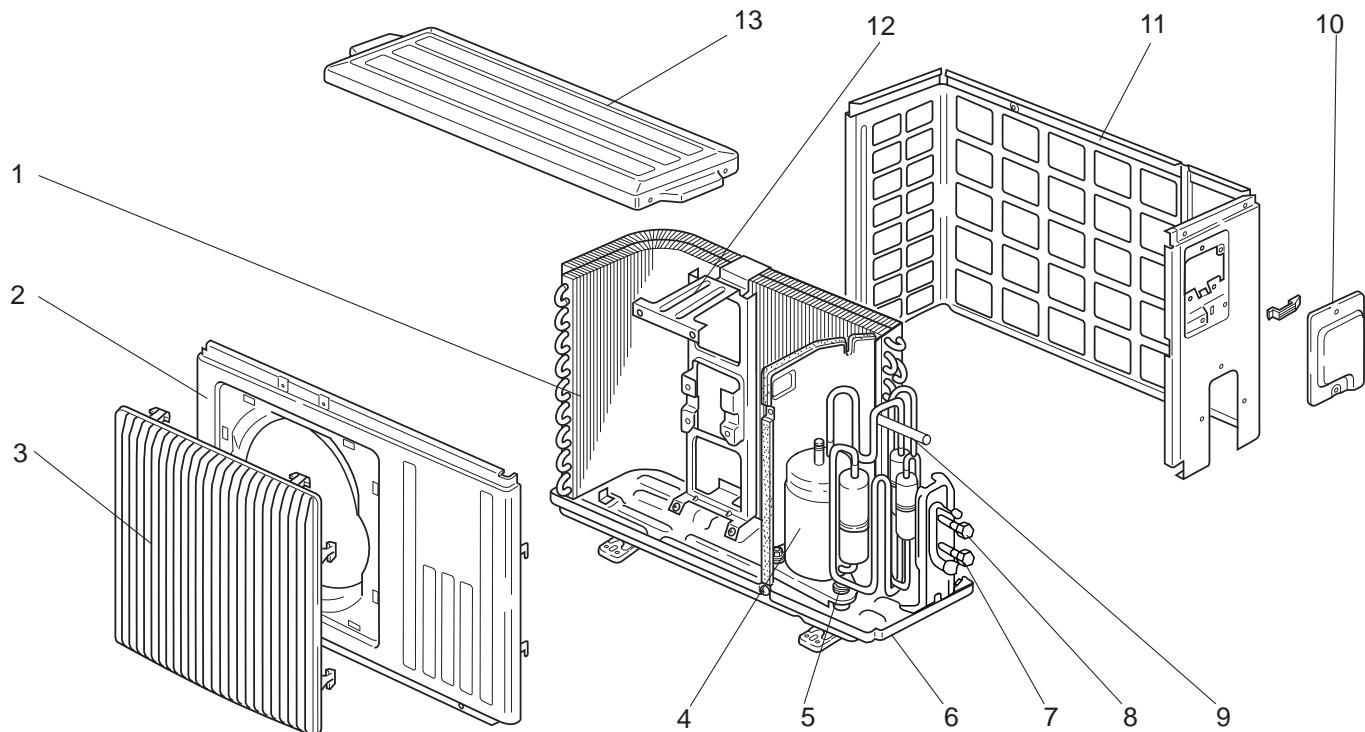
### 13-3. ACCESSORY AND REMOTE CONTROLLER PARTS

12	E02 257 426	REMOTE CONTROLLER		1	1	1		1	1	1		1	1	1	
	E02 576 426	REMOTE CONTROLLER					1				1			1	
13	E02 141 083	REMOTE CONTROLLER HOLDER		1	1	1		1	1			1	1	1	
	E02 527 083	REMOTE CONTROLLER HOLDER					1				1			1	

## 13-4. OUTDOOR UNIT STRUCTURAL PARTS

MUCFH-13NV - E3

MUCFH-13NV - E4



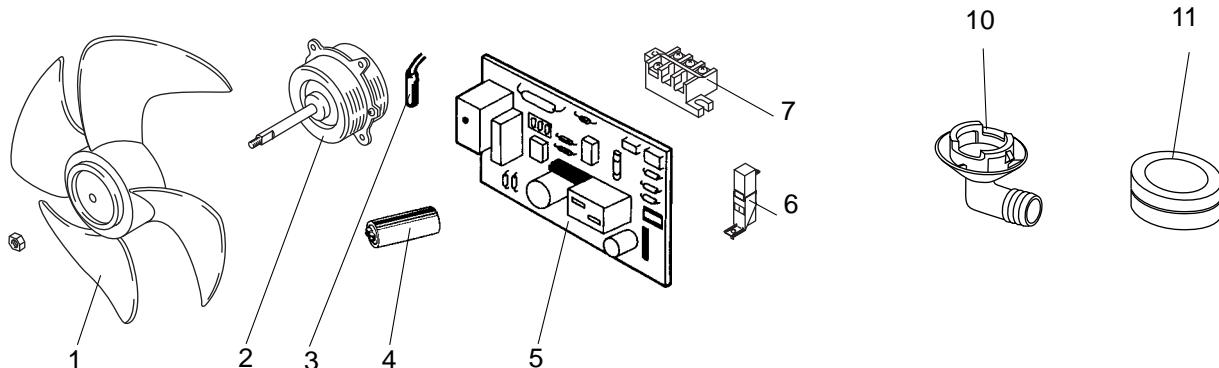
Part numbers that are circled is not shown in the illustration.

No.	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit		Remarks
				MUCFH- 13NV- <span style="border: 1px solid black; padding: 0 2px;">E3</span>	MUCFH- 13NV- <span style="border: 1px solid black; padding: 0 2px;">E4</span>	
1	E02 442 630	OUTDOOR HEAT EXCHANGER		1	1	
2	E02 336 232	CABINET		1	1	
3	E02 336 521	GRILLE(OUT)		1	1	
4	E02 141 900	COMPRESSOR	MC	1	1	RH-231VHAT
5	E02 075 506	COMPRESSOR RUBBER SET		3	3	3PCS/SET
6	E02 340 290	BASE		1	1	
7	E02 340 661	STOP VALVE(GAS)		1	1	φ12.7
8	E02 139 662	STOP VALVE(LIQUID)		1	1	φ6.35
9	E02 444 961	REVERSING VALVE		1	1	
10	E02 336 245	SERVICE PANEL		1	1	
11	E02 440 233	BACK PANEL		1	1	
12	E02 442 515	MOTOR SUPPORT		1	1	
13	E02 336 297	TOP PANEL		1	1	
(14)	E02 445 936	CAPILLARY TUBE		1	1	φ3.0×φ1.8×200
(14)	E02 156 936	CAPILLARY TUBE		2	2	φ3.0×φ1.4×500
(15)	E02 154 642	CHECK VALVE			1	

MUCFH-13NV -E3 MUCFH-13NV -E4

## 13-5. OUTDOOR UNIT

### ELECTRICAL PARTS AND FUNCTIONAL PARTS



## 13-5. OUTDOOR UNIT ELECTRICAL PARTS AND FUNCTIONAL PARTS

Part number that are circled are not shown in the illustration.

No.	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit		Remarks
				MUCFH- 13NV- <span style="border: 1px solid black; padding: 0 2px;">E3</span>	MUCFH- 13NV- <span style="border: 1px solid black; padding: 0 2px;">E4</span>	
1	E02 336 501	PROPELLER FAN		1	1	
2	E02 442 301	OUTDOOR FAN MOTOR	MF	1	1	RA6V33-□□
3	E02 440 310	DEFROST THERMISTOR	RT61	1	1	
4	E02 079 353	COMPRESSOR CAPACITOR	C1	1	1	30μF/440VAC
5	E02 445 451	DEICER P.C. BOARD		1	1	
6	E02 128 383	SURGE ABSORBER	DSAR	1	1	
7	E02 198 374	TERMINAL BLOCK(OUT)	TB	1	1	
(8)	E02 440 490	R.V. COIL	21S4	1	1	
(9)	E02 095 382	FUSE	F61	1	1	250V 2A

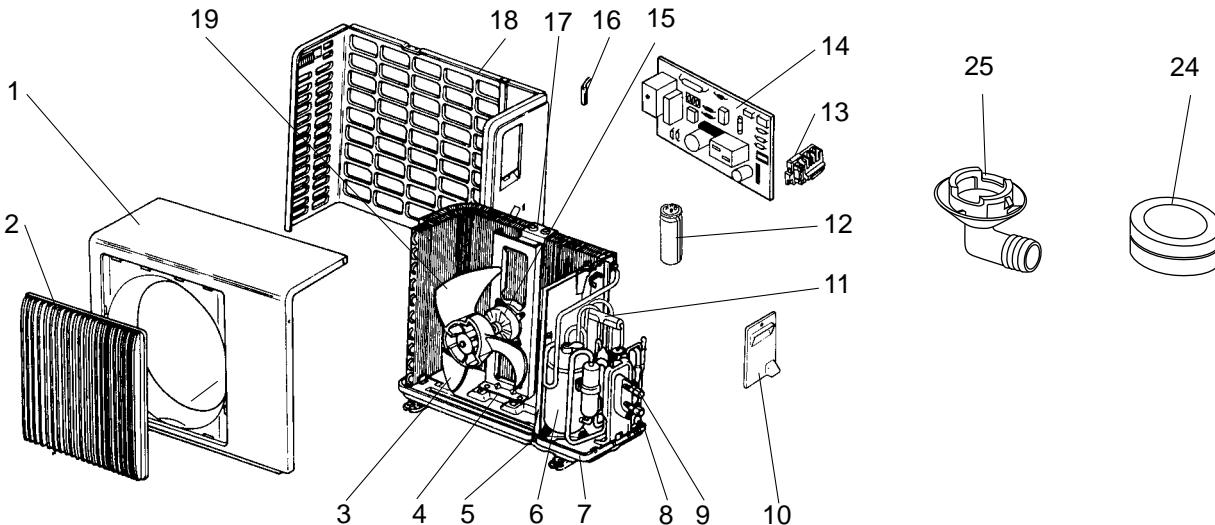
## 13-6. ACCESSORY PARTS

10	E02 444 704	DRAIN SOCKET		1	1	
11	E02 444 705	DRAIN CAP		2	2	

**MUCFH-13NV-<sub>E1</sub> MUCFH-13NV-<sub>E2</sub>**  
**MUCFH-18NV-<sub>E1</sub> MUCFH-18NV-<sub>E2</sub> MUCFH-18NV-<sub>E3</sub>**

**13-7. OUTDOOR UNIT STRUCTURAL PARTS**

**13-8. ACCESSORY PARTS**



**13-7. OUTDOOR UNIT STRUCTURAL PARTS**

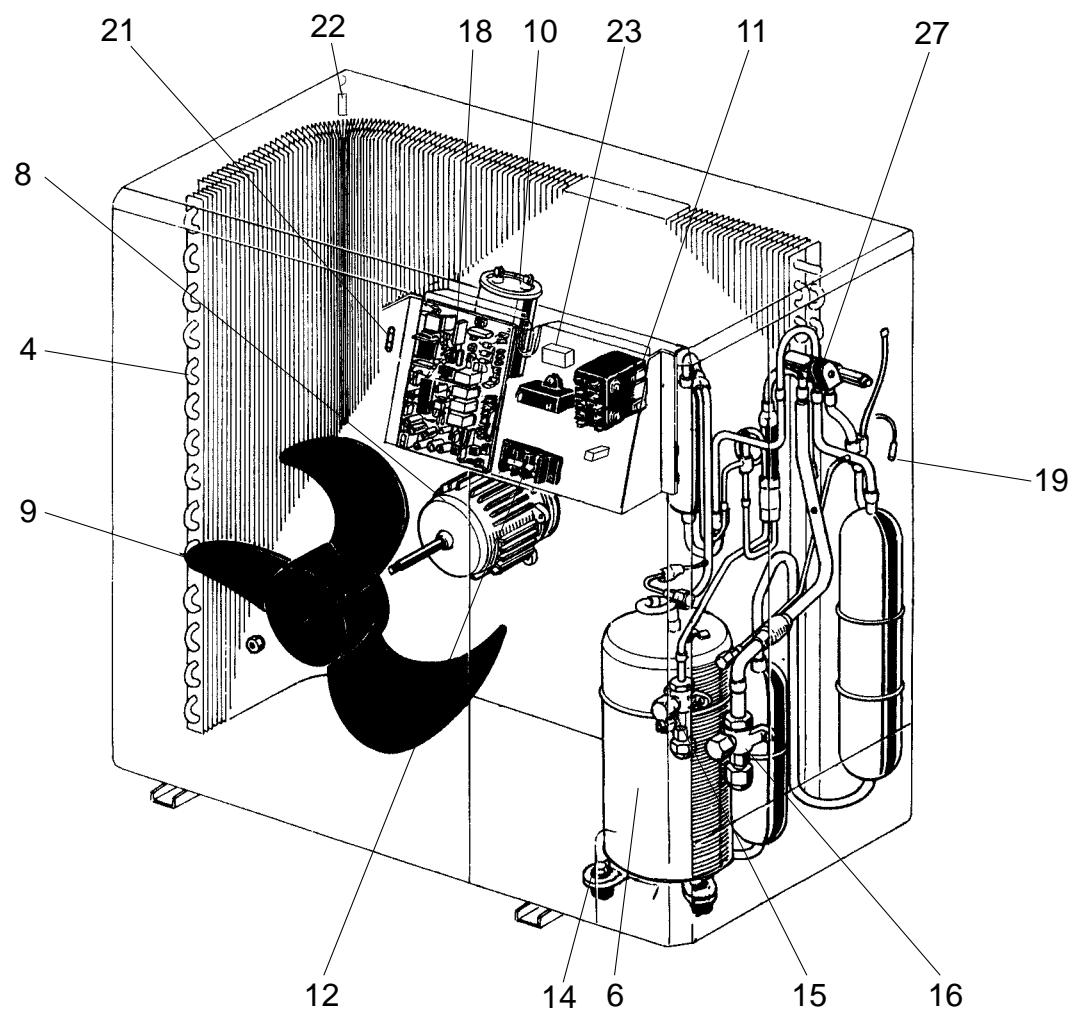
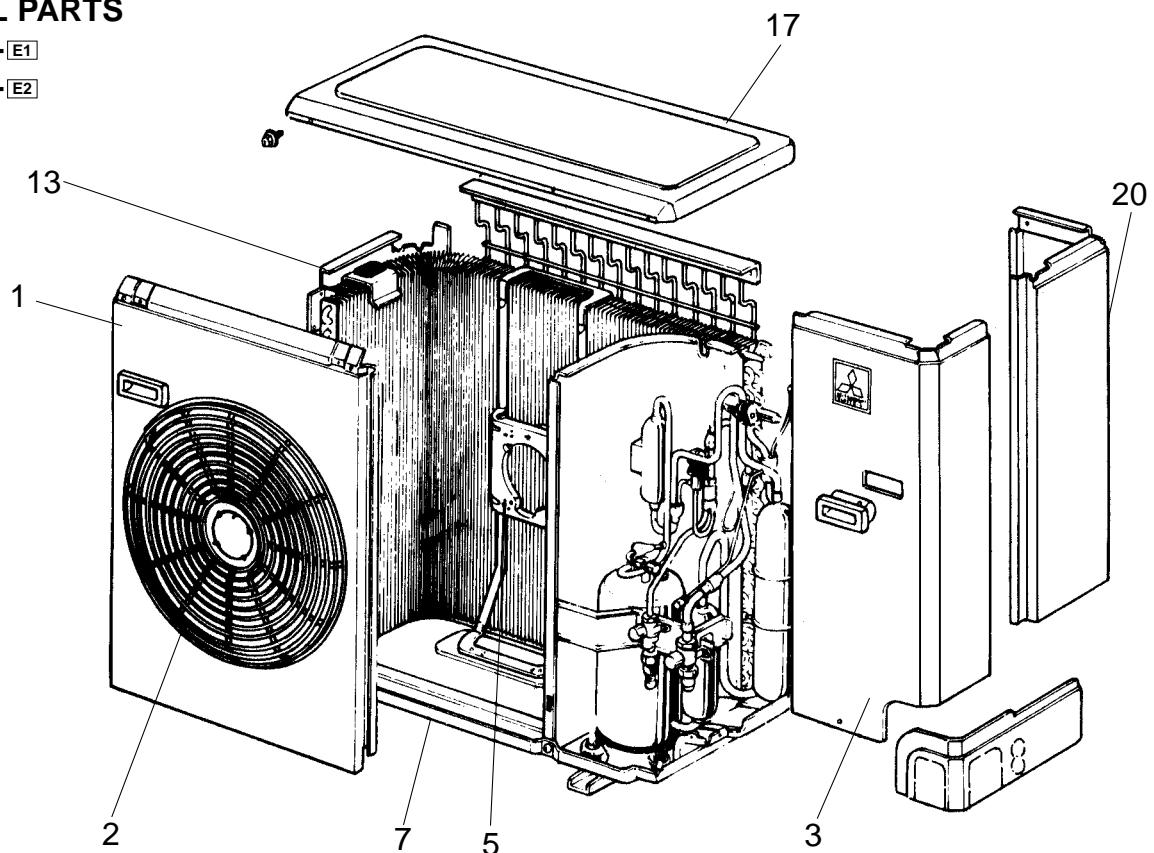
Part numbers that are circled is not shown in the illustration.

No.	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit					Remark		
				MUCFH		18NV-					
				13NV-	18NV-	[E1]	[E2]	[E1]	[E2]	[E3]	
1	E02 141 232	CABINET		1	1	1	1	1	1		
2	E02 141 521	GRILLE(OUT)		1	1	1	1	1	1		
3	E02 141 501	PROPELLER FAN		1	1	1	1	1	1		
4	E02 139 515	MOTOR SUPPORT		1	1	1	1	1	1		
5	E02 075 506	COMPRESSOR RUBBER SET		3	3					3PCS/SET	
	E02 138 506	COMPRESSOR RUBBER SET						4	4	4	4PCS/SET
6	E02 141 900	COMPRESSOR	MC	1	1						RH-231VHAT
	E02 139 900	COMPRESSOR	MC					1	1	1	NH-36VMDT
7	E02 201 290	BASE		1	1						
	E02 139 290	BASE						1	1	1	
8	E02 140 661	STOP VALVE(GAS)		1	1						ø12.7
	E02 150 661	STOP VALVE(GAS)						1	1	1	ø15.88
9	E02 139 662	STOP VALVE(LIQUID)		1	1	1	1	1	1	1	ø6.35
10	E02 141 245	SERVICE PANEL		1	1	1	1	1	1	1	
11	E02 444 961	4-WAY VALVE		1	1	1	1	1	1	1	
12	E02 079 353	COMPRESSOR CAPACITOR	C1	1	1						30µF/440VAC
	E02 082 353	COMPRESSOR CAPACITOR	C1					1	1	1	50µF/440VAC
13	E02 198 374	TERMINAL BLOCK	TB	1	1	1	1	1	1	1	
14	E02 198 451	DEICER P.C.BORD		1	1	1	1	1	1	1	
15	E02 141 301	OUTDOOR FAN MOTOR	MF	1	1						
	E02 144 301	OUTDOOR FAN MOTOR	MF					1	1	1	
16	E02 139 310	DEFROST THERMISTOR	RT61	1	1	1	1	1	1	1	
17	E02 156 630	OUTDOOR HEAT EXCHANGER		1	1						
	E02 139 630	OUTDOOR HEAT EXCHANGER						1	1	1	
18	E02 140 233	BACK PANEL		1	1	1	1	1	1	1	
19	E02 238 936	CAPILLARY TUBE						1	1	1	ø3.0Xø2.0X600
	E02 257 936	CAPILLARY TUBE		1	1						ø3.0Xø2.0X250
	E02 176 936	CAPILLARY TUBE		1	1						ø3.0Xø1.6X350
	E02 172 936	CAPILLARY TUBE					2	2	2	2	ø3.0Xø1.6X750
20	E02 004 340	COMPRESSOR CONTACTOR	52C	1	1	1	1	1	1	1	
21	E02 095 382	FUSE	F61	1	1	1	1	1	1	1	2A
22	E02 128 383	SURGE ABSORBER	DSAR	1	1	1	1	1	1	1	
23	E02 139 490	R.V. COIL	21S4					1	1	1	
	E02 156 490	R.V. COIL	21S4	1	1						

**13-8. ACCESSORY PARTS**

25	E02 444 704	DRAIN SOCKET		1	1	1	1	1	
24	E02 444 705	DRAIN CAP		2	2	2	2	2	

**OUTDOOR UNIT  
STRUCTURAL PARTS**  
**MUCFH-24NV-<sub>E1</sub>**  
**MUCFH-24NV-<sub>E2</sub>**



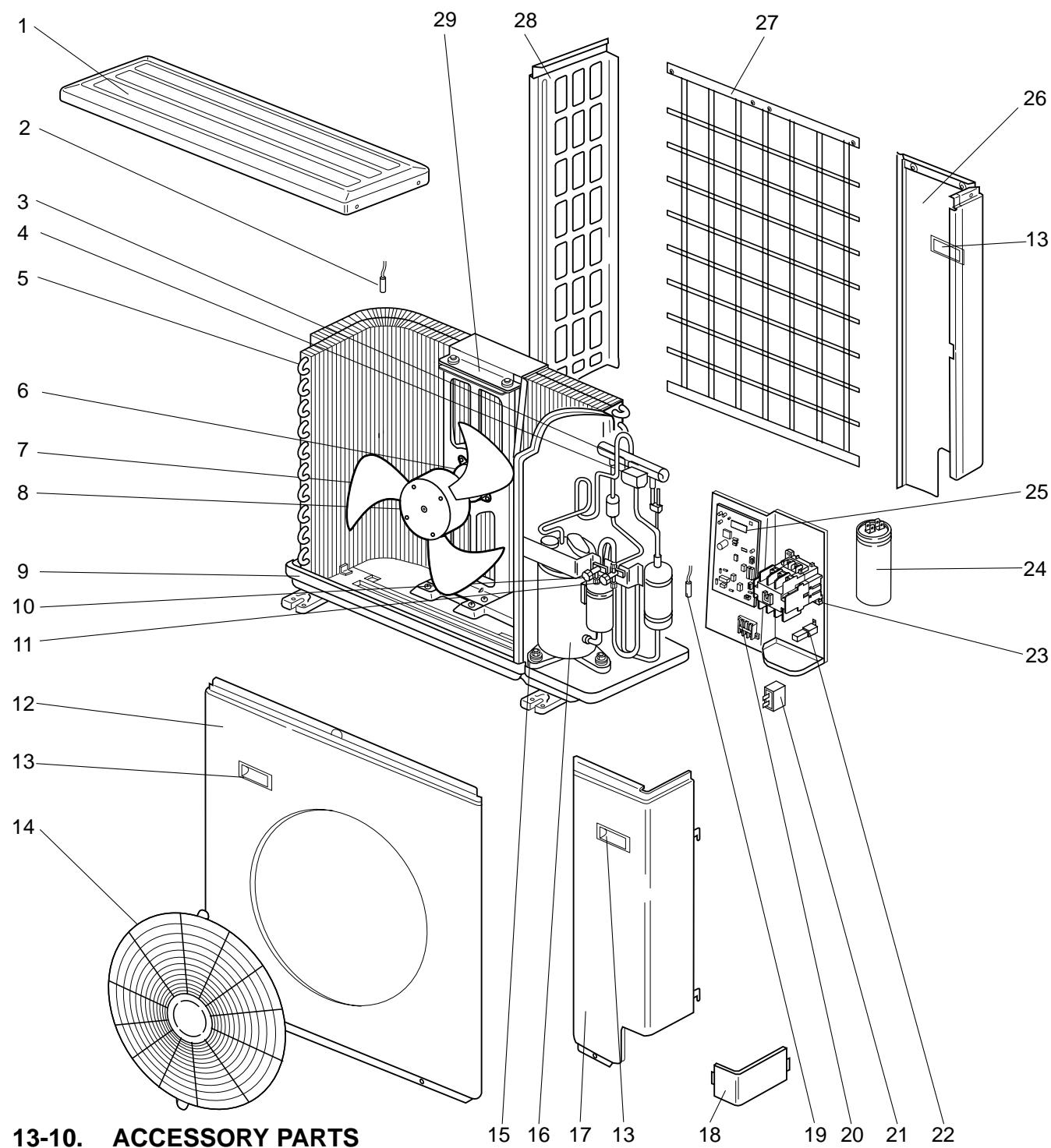
**OUTDOOR UNIT**  
**STRUCTURAL PARTS**  
**MUCFH-24NV-[E1]**  
**MUCFH-24NV-[E2]**

Part number that are circled is not shown in the illustration.

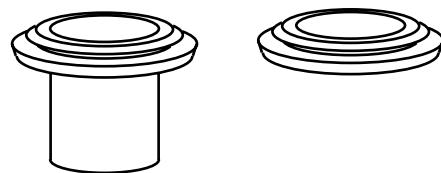
NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit		Remarks	
				MUCFH-24NV-			
				[E1]	[E2]		
1	E02 214 232	CABINET		1			
2	E02 214 521	FAN GUARD		1			
3	E02 214 245	SERVICE PANEL		1			
4	E02 214 630	OUTDOOR HEAT EXCHANGER		1			
5	E02 214 515	MOTOR SUPPORT		1			
6	E02 042 900	COMPRESSOR	MC	1		NH-47VMDT	
7	E02 214 290	BASE		1			
8	E02 214 301	OUTDOOR FAN MOTOR	MF	1		RA6V85 -AA	
9	E02 214 501	PROPELLER FAN		1			
10	E02 082 353	COMPRESSOR CAPACITOR	C1	1		50 $\mu$ F/440VAC	
11	E02 010 342	CONTACTOR	52C1	1			
12	E02 198 374	TERMINAL BLOCK	TB	1			
13	E02 214 249	SIDE PANEL		1			
14	E02 138 506	COMPRESSOR RUBBER SET		4		4PCS/SET	
15	E02 010 662	STOP VALVE(LIQUID)		1		$\phi$ 9.52	
16	E02 010 661	STOP VALVE(GAS)		1		$\phi$ 15.88	
17	E02 214 297	TOP PANEL		1			
18	E02 214 451	DEICER P.C. BOARD		1			
19	E02 214 310	DEFROST THERMISTOR	RT61	1			
20	E02 214 522	REAR PANEL		1			
21	E02 095 382	FUSE	F,F61	2		2A	
22	E02 214 381	THERMOSTAT	26F1	1			
23	E02 288 343	FAN MOTOR RELAY	X1	1			
24	E02 128 383	SURGE ABSORBER	DSAR	1			
25	E02 214 384	SURGE KILLER 1	CR	1			
26	E02 214 386	SURGE KILLER 2	CZ	1			
27	E02 156 490	R.V.COIL	21S4	1			
	E02 176 936	CAPILLARY TUBE		1		$\phi$ 3.0 $\times$ $\phi$ 1.6 $\times$ 350	
28	E02 256 936	CAPILLARY TUBE		1		$\phi$ 3.0 $\times$ $\phi$ 2.0 $\times$ 350	
	E02 262 936	CAPILLARY TUBE		1		$\phi$ 4.0 $\times$ $\phi$ 2.4 $\times$ 200	

MUCFH-24NV-E3

### 13-9. OUTDOOR UNIT NSTRUCTURAL PARTS



### 13-10. ACCESSORY PARTS



MUCFH-24NV-E3

## 13-9. OUTDOOR UNIT STRUCTURAL PARTS

Part number that are circled is not shown in the illustration.

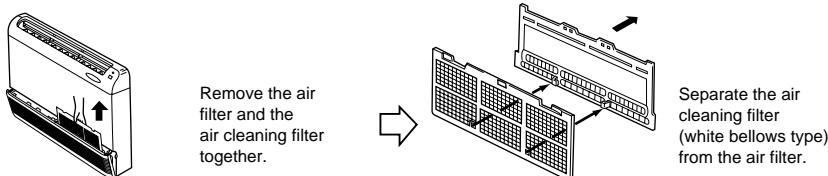
NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit		Remarks
				MUCFH-24NV- <span style="border: 1px solid black; padding: 0 2px;">E3</span>		
1	E02 214 297	TOP PANEL		1		
2	E02 540 309	AMBIENT TEMPERATURE THERMISTOR	RT63	1		
3	E02 444 961	4-WAY VALVE		1		
4	E02 529 490	R.V. COIL	21S4	1		
5	E02 214 630	OUTDOOR HEAT EXCHANGER		1		
6	E02 214 301	OUTDOOR FAN MOTOR	MF	1		RA6V85-□□
7	E02 214 501	PROPELLER FAN		1		
8	E07 070 508	PROPELLER FAN NUT		1		
9	E02 214 290	BASE		1		
10	E02 527 662	STOP VALVE(LIQUID)		1		ø9.52
11	E02 527 661	STOP VALVE(GAS)		1		ø15.88
12	E02 214 232	CABINET		1		
13	E07 001 009	HANDLE		3		
14	E02 527 521	FAN GUARD		1		
15	E02 138 506	COMPRESSOR RUBBER SET		4		4RUBBERS/SET
16	E02 042 900	COMPRESSOR	MC	1		NH-47VMDT
17	E02 214 245	SERVICE PANEL		1		
18	E07 001 006	COVER PANEL		1		
19	E02 529 310	DEFROST THERMISTOR	RT61	1		
20	E02 198 374	TERMINAL BLOCK	TB	1		4P
21	E02 138 351	OUTDOOR FAN CAPACITOR	C2	1		3.0µF/440VAC
22	E02 128 383	SURGE ABSORBER 1	DSAR	1		
23	E02 010 342	COMPRESSOR CONTACTOR	52C	1		S-N25EX 250VAC
24	E02 082 353	COMPRESSOR CAPACITOR	C1	1		50µF/440VAC
25	E02 578 451	DEICER P.C. BOARD		1		
26	E02 214 522	REAR PANEL		1		
27	E07 605 523	REAR GUARD		1		
28	E02 214 249	SIDE PANEL		1		
29	E02 527 515	MOTOR SUPPORT		1		
30	E02 262 936	CAPILLARY TUBE		1		ø4.0Xø2.4X200
	E02 176 936	CAPILLARY TUBE		1		ø3.0Xø1.6X350
	E02 256 936	CAPILLARY TUBE		1		ø3.0Xø2.0X350
31	E02 127 382	FUSE	F61	1		3.15A
32	E02 336 385	VARISTOR	NR61	1		
33	E02 096 642	CHECK VALVE		1		
34	E02 214 642	CHECK VALVE		1		
35	E02 214 644	DISCHAGE PRESSUR REGULATOR		1		
	E02 214 384	SURGE ABSORBER 2	CZ	1		

## 13-8. ACCESSORY PARTS

25	E02 329 704	DRAIN SOCKET		1	
24	E02 444 705	DRAIN CAP		6	

### 14-1. AIR CLEANING FILTER

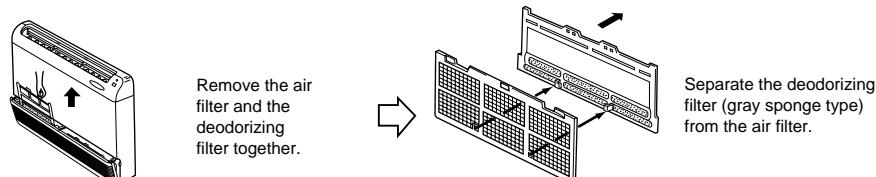
- If the air cleaning filter is clogged, it may lower the unit's capacity or cause condensation at the air outlet .
- The air cleaning filter is disposable . The standard usable term is about 4 months . However , if the color of the filter turns to dark brown , replace soon .



Models	Part No.
<b>MCFH - 13NV-<small>E4</small></b>	
<b>MCFH - 18NV-<small>E3</small></b>	MAC - 1200 FT
<b>MCFH - 24NV-<small>E3</small></b>	

### 14-2. DEODORIZING FILTER

- Clean the filter every two weeks . When it becomes too dirt , clean it more often .
- Replace the filter with a new one when its color can not be restored even after washing or when the filter becomes dark.
- Standard interval for the filter replacement is about 1 year .



Models	Part No.
<b>MCFH - 13NV-<small>E4</small></b>	
<b>MCFH - 18NV-<small>E3</small></b>	MAC - 1700 DF
<b>MCFH - 24NV-<small>E3</small></b>	

**MITSUBISHI ELECTRIC CORPORATION**

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